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ABSTRACT

This collection is designed for use by educators who need to make decisions about the use of microcomputers in schools, or who want to keep abreast of new developments in the field. The report provides an overview of the literature entered into the ERIC database in 1989 on computer use in elementary and secondary education, adult education, and special education. Higher education is excluded from the report. The bibliography is divided into four sections: Computer Assisted Instruction--Overview Documents, Special Applications, Subject Applications, and Special Populations. The first section contains abstracts for documents that provide a general discussion of computer assisted instruction (CAI). The second section covers artificial intelligence, computer equity, computer literacy, computer simulation, copyright, counseling and guidance, interactive video, management/administration, research, software evaluation, telecommunications, testing, and trends. The third section encompasses business, English as a second language and foreign languages, fine arts, language arts, the Logo programming language, mathematics, programming, reading, science, social studies, vocational education, and writing. The fourth section contains abstracts on adult education, disabled learners, distance education, learning disabled, and preschool education. Within each section, items are listed alphabetically by personal author, editor, or corporate author and contain the document title, publication date, number of pages, price, type of document, descriptors, and abstract. An author index and information on ordering documents from the ERIC Document Reproduction Center conclude the document. (DB)

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COMPUTER-BASED EDUCATION

The Best of ERIC, 1989

by
Pamela McLaughlin

ERIC

1990

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COMPUTER-BASED EDUCATION
The Best of ERIC 1989

by

Pamela McLaughlin

November 1990

ERIC Clearinghouse on Information Resources
Syracuse University
Syracuse, New York

Pamela McLaughlin is currently the head of online search services at the Syracuse University Library. A 1980 graduate of the School of Information Studies at Syracuse University with the M.L.S. degree, she also holds an undergraduate degree in music. Her prior experience in the library/information science field includes positions as a reference/instruction librarian at the State University of New York College at Oswego, and as the coordinator of user services at the ERIC Clearinghouse on Information Resources at Syracuse University. This is the fifth volume in this series that Ms. McLaughlin has edited.

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Computer-Based Education: The Best of ERIC 1987, by Pamela McLaughlin (ED 318 474). 1988.

Computer-Based Education: The Best of ERIC 1986, by Pamela McLaughlin (ED 295 675). 1987.

Computer-Based Education: The Best of ERIC 1983-1985, by Pamela McLaughlin (ED 284 542). 1986.

Computer-Based Education: The Best of ERIC June 1976-1982. Revised and Updated, by Keith A. Hall (ED 232 615). 1982.

Computer-Based Education: The Best of ERIC June 1976-August 1980, by Keith A. Hall (ED 195 288). 1980. (Incorporated in the 1982 edition.)

Computer-Assisted Instruction: The Best of ERIC 1973-May 1976, by Marian Beard (ED 125 608). 1976.

The Best of ERIC: Recent Trends in Computer-Assisted Instruction, by Richard E. Clark (ED 076 025). 1973.

This is the fourth annual update in this series.

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FOREWORD

This edition of **Computer Based Education: The Best of ERIC** is the ninth in the series that began in 1973. Together, these nine compilations chart the rapid implementation and impact of computer technology in education. They also attest to the tremendous growth in the literature about computers in education.

As noted in previous editions, the publication is a dynamic one, with changing categories and emphases. For each edition, the selection of entries becomes more difficult due to the increasing number of entries in the ERIC database related to computing. At the same time, selecting from a rich baseline improves the overall quality of the entries. We hope this increasing selectivity continues to add value to the product.

Consistency of selection is an important quality control factor, and we are again pleased to have Pamela McLaughlin as the editor. This is her fourth volume in the series. Ms. McLaughlin has carefully described the selection process she used in the ***Introduction*** to this edition.

Computing technology continues to dominate the literature of educational technology. The ERIC Clearinghouse on Information Resources regularly indexes 13 journals devoted exclusively to computers in education. There are more than a dozen more that contain computer related articles among a broader offering of items that cover the field of educational technology. Our annual analysis of trends and issues again shows the dominance of the computer literature within the scope of the larger field. In addition, articles discussing the use of computers in various educational contexts appear in almost every general and specialized education periodical. Most of these articles are indexed in **Current Index to Journals in Education** (CIJE), the journal portion of the ERIC database.

ERIC also indexes increasing numbers of reports, guides, conference papers, and other documents concerned with computer technology. Since journal articles are generally more widely covered than documents, this edition of **Computer Based Education: The Best of ERIC** focuses exclusively on the best documents indexed in **Resources in Education** (RIE), the document portion of the database. Readers will find most of these items available in full-text in ERIC microfiche collections.

As the Clearinghouse on Information Resources attempts to keep in the forefront of trends and developments, we publish synthesis monographs and digests. This year we published the monograph, **Trends and Issues in Educational Technology 1989**, as well as a short digest based on the larger work. The digest is appended to this volume.

We welcome your reactions to this year's edition and the entire series. Please send us comments about how we can make it even more relevant to your needs.

Michael B. Eisenberg, Director
ERIC Clearinghouse on Information Resources
Syracuse, New York
September 1990

Introduction

This publication is the fourth annual update in the **Computer-Based Education: The Best of ERIC** series. Other volumes in this series are listed on the back of the title page.

This series has been designed for use by educators who need to make decisions about the use of microcomputers in schools, or who want to keep abreast of new developments in the field. This update provides an overview of the literature entered into the ERIC database in 1989 on computer use in elementary and secondary education, adult education, and special education. It should be noted that 1989 is the date when these materials were entered into the ERIC database, and that the actual publication date may be a year or more earlier.

Higher Education Excluded. Applications of computer-based education in institutions of higher learning differ in many ways from applications in elementary and secondary schools. These differences include the availability of hardware and software, delivery mechanisms, and other issues related to the growth and development of computing and management of computing resources in higher education. This area is sufficiently different to warrant separate treatment.

Scope of the Bibliography

Substantive ERIC documents from the 1989 volumes of **Resources in Education** (RIE) have been selected for inclusion in this publication; journal articles have not been included due to their availability in other bibliographic sources. For each topic covered, selected ERIC document citations are listed. Types of materials targeted for selection include:

- Handbooks;
- Literature reviews;
- Teaching guides;
- Administrator guides;
- Bibliographies;
- Research reports;
- Program descriptions;
- Conference papers; and
- Evaluative reports.

Search Strategy

In order to streamline the production of the bibliography, three types of online searches were done to collect the initial set of items for review. As with previous editions, a general search was conducted, limited to 1989 entries and eliminating the educational level for higher education. Major descriptors searched were any term including the word COMPUTER or COMPUTERS, MICROCOMPUTER or MICROCOMPUTERS, or ELECTRONIC MAIL, COURSEWARE, MAN MACHINE SYSTEMS, ARTIFICIAL INTELLIGENCE, or EXPERT SYSTEMS. This search resulted in 507 items.

In addition, in order to create some of the categories, separate searches were done for distinct subject areas, such as INTERACTIVE VIDEO, LOGO, PROGRAMMING, COPYRIGHT, COMPUTER SIMULATION, COMPUTER LITERACY, ARTIFICIAL INTELLIGENCE, and TRENDS, again restricted to 1989 entry dates.

A second series of subject searches was then done, and combined with the original 507 item set to produce the categories DISABILITIES, DISTANCE EDUCATION, SOFTWARE EVALUATION, MANAGEMENT/ADMINISTRATION, FINE ARTS, COMPUTER EQUITY, BUSINESS, LANGUAGE ARTS, PRESCHOOL, READING, ESL, SOCIAL STUDIES, SCIENCE, and MATHEMATICS. Resulting items were removed from the 507 item set, and the remaining items were reviewed and integrated into the appropriate categories. Two additional categories created as a result of that review were RESEARCH and TELECOMMUNICATIONS.

Of the original 507 items and additional items retrieved in the first category searches, 323 were selected for inclusion. The original result is less than in prior years, and more items have been selected. This is a result of less stringent application of criteria, to offer broader coverage of the issues.

7

New Categories

This update includes three new categories, FINE ARTS, TRENDS, and TELECOMMUNICATIONS. Several other categories from past editions return with this update, including COMPUTER SIMULATION, BUSINESS, LANGUAGE ARTS, and DISTANCE EDUCATION. Categories not appearing in this edition are COMPUTER ETHICS (*see* COMPUTER EQUITY), and KEYBOARDING.

Organization of the Bibliography

This bibliography is divided into four major sections, ***Computer Assisted Instruction—Overview Documents, Special Applications*** (i.e., those without a specific subject orientation), ***Subject Applications***, and ***Special Populations***.

The first section contains six documents that provide a general discussion of computer assisted instruction, including historical studies, a case study, a literature review, and guidelines for purchase.

The second section, *Special Applications*, contains 13 categories. Contents include: 19 documents on ARTIFICIAL INTELLIGENCE, up from two last year, including one historical review, three research reports, four literature reviews, six conference papers, two evaluative reports, and three project descriptions; 11 papers in the COMPUTER EQUITY section dealing with gender, socioeconomic, and ethnic issues; 12 items under COMPUTER LITERACY, including three conference papers, three teaching guides, one case study, one literature review, one bibliography, proceedings of one conference, and one practicum paper; eight papers in the COMPUTER SIMULATION section, including six research reports and two conference papers; three papers on COPYRIGHT; 11 documents on INTERACTIVE VIDEO, including one directory, one project report, one case study, one position paper, two conference papers, two research reports, one overview document, one product review, and one literature review; 20 items on MANAGEMENT/ADMINISTRATION, including one planning report, six conference papers, four research reports, two project descriptions, two evaluative reports, and one handbook; 12 RESEARCH REPORTS not elsewhere classified; eight documents on SOFTWARE EVALUATION, including three directories, three collections of reviews, one teaching guide, and one literature review; four items on TELECOMMUNICATIONS; 16 on COMPUTER-ASSISTED TESTING; and four papers on TRENDS.

The third section covers computer applications in various subject areas, including five items on BUSINESS EDUCATION; nine reports on ENGLISH AS A SECOND LANGUAGE AND FOREIGN LANGUAGE INSTRUCTION, including four conference papers, one research report, one literature review, one directory, one evaluative report, and one teaching guide; three papers on FINE ARTS; five documents on LANGUAGE ARTS; 15 items on LOGO, including nine conference papers, two teaching guides, one research report, and the proceedings of one conference; 28 reports on MATHEMATICS, including seven conference papers, two software reviews, eight research reports, two literature reviews, four project reports, four teaching guides, and one directory; 12 papers on PROGRAMMING; 12 reports on READING, including five conference papers, one collection of essays, three research reports, one ERIC Digest, one bibliography, and one thesis; 30 items on SCIENCE, including eight conference papers, seven teaching guides, 10 research reports, one literature review, three project descriptions, and one bibliography; three reports on SOCIAL STUDIES; nine documents on VOCATIONAL EDUCATION, including eight reviews of software, and one teaching guide; and 11 papers on WRITING, including three teaching guides, four conference papers, two bibliographies, one literature review, and one project description.

The final section addresses *Special Populations*, and includes 13 documents on computer applications in ADULT EDUCATION; 14 papers on persons with DISABILITIES, including two directories, six conference papers, four teaching guides, one literature review, and one project description; seven papers on DISTANCE EDUCATION; five reports on persons with LEARNING DISABILITIES; and five documents on uses of computers with PRESCHOOL CHILDREN.

Within each section, items are listed alphabetically by personal author, editor, or corporate author. Where no author is available, items are listed by title.

There is some overlap between the sections in the subject matter covered, e.g., one document in the PRESCHOOL section deals with EQUITY issues. There is also potential for overlap between the SCIENCE and MATHEMATICS sections, COMPUTER LITERACY and the **Overview** section, and the READING, WRITING, and LANGUAGE ARTS sections. An attempt has been made to list documents in the most appropriate category; individual items have generally not been listed in more than one category. Users will want to check all relevant sections for information on a given topic.

Computer Assisted Instruction

Overview Documents

ED305434

A History of Computer Numerical Control.

Haggen, Gilbert L.

Dec 1988, 16p. Paper presented at the American Vocational Association Convention (St. Louis, MO, December 1988).

EDRS PRICE - MF01/PC01 plus postage.

DOCUMENT TYPE: Conference Paper (150); Historical Material (060)

MAJOR DESCRIPTORS: *Computers; *Computer Software; *Machine Tools; *Numerical Control; *Technological Advancement

Computer numerical control (CNC) has evolved from the first significant counting method—the abacus. Babbage had perhaps the greatest impact on the development of modern day computers with his analytical engine. Hollerith's functioning machine with punched cards was used in tabulating the 1890 U.S. Census. In order for computers to become a reality, the binary number system, Boolean algebra, and electromechanical circuitry, a system used by every digital computer, had to be discovered, invented, or developed. During World War II, IBM built a computer using simple electromechanical relays as on-off switching devices and punched tape to provide the necessary information to manipulate data. The 1950s saw the start of two related trends—building of a magnetic memory and development of the transistor. Through the 1960s, the integrated circuit, microcomputers, and memory chips were developed. Further advances in the chip, affordable computers, and software occurred in the 1970s. In 1976, CNC made its debut at the Chicago Trade Show. As computer chips became smaller and more powerful, the CNC machines could be used with almost any process involving X,Y,Z coordinates. Examples of contemporary CNC machines are the Bosto Matic Model 405, Cincinnati Milacron's Acramatic 760 G, and G.E.'s Fanuc Automation's CNC. Future developments will include more artificial intelligence and the clone-type brain.

ED298902

Programmed Instruction to Computer-Based Instruction: The Evolution of an Instructional Technology.

Lamos, Joseph P.

1984, 9p. In: *Instructional Development: The State of the Art, II*; see ED 298 888. For volume I, see ED 292 444.

EDRS PRICE - MF01/PC01 plus postage.

DOCUMENT TYPE: Historical Material (060); Review Literature (070); Position Paper (120)

MAJOR DESCRIPTORS: *Behaviorism; *Cognitive Psychology; *Computer Assisted Instruction; *Programed Instruction; *Teaching Machines

MAJOR IDENTIFIERS: *Pressey (Sidney Leavitt); *Skinner (B F)

This review of the evolution of programmed instruction from Pressey and Skinner to the present suggests that current computer technology will be able to free the learner from the limitations of time and place as Pressey originally proposed. It is noted that Skinner provided the necessary foundation for treating the learning process on an individual basis, while Pressey not only provided the necessary technological implement—the teaching machine—but also anticipated the present cognitive perspective and its importance for the instructional technology of the present and the future, i.e., the computer. It is suggested that programmed instruction, with its basis in cognitive psychology, is better able to handle complexity than other forms of instruction, and recent developments in aptitude-treatment interaction (ATI) research are discussed. Finally, the use of intelligent computer-assisted instruction is considered in the context of the SOPHIE (SOPHisticated Instructional Environment) system, and it is suggested that such systems represent the realization of the type of teaching machine first envisioned by Pressey.

ED302216

Computer Integration in the Curriculum: Promises and Problems.

Plomp, Tjeerd; Akker, Jan J. H. van den

Apr 1988, 18p. Paper presented at the Annual Meeting of the American Educational Research Association (New Orleans, LA, April 5-9, 1988).

EDRS PRICE - MF01/PC01 plus postage.
DOCUMENT TYPE: Review Literature (070); Conference Paper (150)
MAJOR DESCRIPTORS: *Adoption (Ideas); *Change Strategies; *Computer Assisted Instruction; *Courseware; *Curriculum Development; *Curriculum Enrichment
MAJOR IDENTIFIERS: *Netherlands

This discussion of the integration of computers into the curriculum begins by reviewing the results of several surveys conducted in the Netherlands and the United States which provide insight into the problems encountered by schools and teachers when introducing computers in education. Case studies of three secondary and two elementary schools in the Netherlands are then presented. The discussion of these studies leads to the conclusion that there are two important types of problems in addition to those usually cited: lack of teacher involvement; and difficulty in integrating available software into usual classroom practice. Implementation strategies drawn from the literature on educational change are discussed, and a recently developed conceptual plan for the implementation of new information technology in the Ontario (Canada) schools is described, with the focus on implications for designers of courseware. Twenty-three references are listed.

ED303173

Microcomputers. LC Science Tracer Bullet.

Rodgers, Kay, Comp.

Library of Congress, Washington, D.C.

Sep 1987, 17p.

EDRS PRICE - MF01/PC01 plus postage.
DOCUMENT TYPE: Bibliography (131)
MAJOR DESCRIPTORS: *Information Sources; *Microcomputers; *Purchasing; *Reference Materials
MAJOR IDENTIFIERS: *Library of Congress

This guide to materials on microcomputers that are available in the Library of Congress is designed to assist individuals in the process of determining the need for a microcomputer, selecting the most appropriate one, understanding its use, and developing the ability to exploit its full potential. Buying guides, evaluations, and books on individual systems are listed to assist persons considering the purchase of a microcomputer with information on what these machines can do and the software that is available. References to books on maintenance and repair are also included. A brief explanation of the scope of the topic introduces the references, which are listed in the following categories: (1) introductions to the microcomputer; (2) subject headings; (3) selected buying guides; (4) basic texts; (5) additional texts; (6) related texts; (7) handbooks, manuals, encyclopedias, and dictionaries; (8) catalogs; (9) maintenance and repair; (10) bibliographies; (11) state-of-the-art reviews and conference proceedings; (12) government publications; (13) abstracting and indexing services; (14) online databases; (15) journals; (16) representative journal articles; (17) indexes to reports; (18) selected technical reports; (19) selected vertical file materials; and (2) associations that can provide additional information.

ED297697

Educating for Excellence: The Role of Instructional Technology.

Senese, Donald J.

29 Aug 1983, 17p. Paper presented before the Education Faculty and Students of the University of North Carolina at Wilmington (Wilmington, NC, August 29, 1983).

EDRS PRICE - MF01/PC01 plus postage.
DOCUMENT TYPE: Conference Paper (150); Project Description (141)
MAJOR DESCRIPTORS: *Computer Uses in Education; *Educational Research; *Educational Technology; *Education Courses; *Federal Programs

Several factors have been involved in elevating education as a prime issue of national concern. One such factor has been the advent of new technologies; another has been the report by the National Commission on Excellence which found a steady decline in Scholastic Aptitude Test Scores, an increase in adult illiteracy, selection of nonrigorous academic studies by students, grade inflation with course content deflation, and people leaving the profession. As a result of these findings, the Commission has called for the strengthening of state and local high school graduation requirements for English, mathematics, science, social studies and computer science. The Office of Educational Research and Improvement (OERI) of the U.S. Department of Education is implementing programs using technology to improve the teaching of basic skills and using educational television to teach science. Federal grants have been awarded to various projects exploring the use of technology to offer training for alternative occupation in high technology for secondary schools, to improve mathematics and reading skills, to develop computer managed instruction, to offer computer science courses for learning disabled and handicapped students, and the award of a grant to Harvard University for the establishment of a Center for Technology to conduct research. The last project has been the Reagan Administration's encouragement to schools to become involved in and share information on instructional technology, and to get the private sector more involved in instructional technology.

ED297698

Excellence in Our Schools: Differences That Count.

Senese, Donald J.

14 May 1984, 10p.; Paper presented at the Southeastern Regional Conference of the Secondary School Recognition Program (Columbia, SC, May 14, 1984).

EDRS PRICE - MF01/PC01 plus postage.

DOCUMENT TYPE: Position Paper (120); Conference Paper (150); Project Description (141)

MAJOR DESCRIPTORS: *Computer Uses in Education; *Educational Innovation; *Educational Technology; *School Effectiveness

America is changing from an industrial age to an information age wherein a premium is placed on the rapid acquisition, assimilation, and use of knowledge. Instructional technology offers the field of education an unprecedented opportunity to emphasize learning, increase teacher productivity and make more effective schools. Educators must face the reality that educational reform and technology are going to require a new way of looking at teachers, the teaching profession, and instructional methods. It is going to require a rethinking of the structure of the educational system to include more instruction outside the traditional four wall classroom, allowing more education in the home and in community centers. Computers will be able to assist in remedial work and higher skill work, and in record keeping and monitoring of student progress, which will free the teacher for other tasks. Technology will require a higher level of skills of teachers; they will need to know the tools (e.g., microcomputers, videodiscs, cable television and slow scan television) and how to use these tools effectively for such tasks as remedial work, building word vocabulary, or tutoring possibilities. Technology must be integrated into the educational program, and its use for both technological goals and educational goals must be maximized. This will require making necessary changes and adjustments to improve the current model or make a new one. Finally, educators need to be opportunity oriented, not problem prone, in focusing on technology in education. The result will be a more productive, more efficient and more effective educational system delivering learning to all areas of the population.

Special Applications

Artificial Intelligence

ED301066

A Contrast between Computer and Human Language Understanding.

Baker, Eva L.; Lindheim, Elaine L.

8 Apr 1988, 14p. Paper presented at the Annual Meeting of the American Educational Research Association (New Orleans, LA, April 8, 1988).

SPONSORING AGENCY: Advanced Research Projects Agency (DOD), Washington, D.C.

EDRS PRICE - MF01/PC01 plus postage.

DOCUMENT TYPE: Evaluative Report (142); Conference Paper (150)

MAJOR DESCRIPTORS: *Artificial Intelligence; *Language Patterns; *Language Processing;

MAJOR IDENTIFIERS: *Natural Language

This document presents a study of natural language understanding of computer programs. In the study, the performance of IRUS, a natural language query system designed to interface with a database, was compared with the performance of preschool and early elementary school children in answering questions about a specific database. Questions used in a test of the IRUS system were classified into semantic and syntactic categories, and a set of specifications for measuring human ability to understand them was developed. Similar questions were then developed and asked of preschool and early elementary children. The children either read the questions themselves or were asked them by an adult, and responded orally or by pointing to a picture on the computer screen, the database developed for the test. Students were asked to explain their responses to validate their understanding of the questions. Characteristics of the students' interactions with the database were recorded and analyzed, and are reported. Further research on higher and lower levels of performance and refinements of the test are planned.

ED298180

Directly Comparing Computer and Human Performance in Language Understanding and Visual Reasoning.

Baker, Eva L.; And Others

Apr 1988, 14p. Paper presented at the Annual Meeting of the American Educational Research Association (New Orleans, LA, April 5-9, 1988).

SPONSORING AGENCY: Office of Naval Research, Washington, D.C.

EDRS PRICE - MF01/PC01 plus postage.

DOCUMENT TYPE: Conference Paper (150); Research Report (143)

MAJOR DESCRIPTORS: *Artificial Intelligence; *Computer Software; *Language Processing; *Visual Perception

MAJOR IDENTIFIERS: *Interface System; *Visual Thinking

Evaluation models are being developed for assessing artificial intelligence (AI) systems in terms of similar performance by groups of people. Natural language understanding and vision systems are the areas of concentration. In simplest terms, the goal is to norm a given natural language system's performance on a sample of people. The specific program under study is a natural language query system, IRUS—an interface between the user and the information desired. IRUS is designed to serve as a general purpose interface to a broad range of databases and expert systems. A pilot study is discussed, which was conducted with early elementary school and preschool students to determine the appropriate language understanding level at which to administer the IRUS test. In the vision area, common measures of visual tasks are being analyzed in terms of their appropriateness to the vision system. This is the inverse of the language exploration that began with the tasks and created the measures. A review by the vision community of approaches they would use to compare human and machine vision will determine if looking for consistent benchmarks is a feasible approach.

ED308811

Educational Technology: Integration?

Christensen, Dean L.; Tennyson, Robert D.

Feb 1989, 10p. In: *Proceedings of Selected Research Papers presented at the Annual Meeting of the*

Association for Educational Communications and Technology (Dallas, TX, February 1-5, 1989). For the complete proceedings, see ED 308 805.
EDRS PRICE - MF01/PC01 plus postage.
DOCUMENT TYPE: Review Literature (070); Position Paper (120); Conference Paper (150)
MAJOR DESCRIPTORS: *Artificial Intelligence; *Computer Assisted Instruction; *Educational Technology
MAJOR IDENTIFIERS: *Minnesota Adaptive Instructional System

This paper presents a perspective of the current state of technology-assisted instruction integrating computer language, artificial intelligence (AI), and a review of cognitive science applied to instruction. The following topics are briefly discussed: (1) the language of instructional technology, i.e., programming languages, including authoring systems; (2) technology assisted instruction using AI, including the formal study of AI in computer science and current applications of AI in education, industry, and high-technology fields; (3) AI principles applied to instruction, including the three components of the operational functions of an AI system, i.e., expertise module, student-model module, and tutoring module; and (4) a cognitive science paradigm applied to instruction, including computer based instructional (CBI) characteristics of systems that exhibit elements of machine intelligence and the development and characteristics of the MAIS (Minnesota Adaptive Instructional System). (22 references)

ED299963

From GUIDON to NEOMYCIN and HERACLES in Twenty Short Lessons. Final Report. ONR Technical Report #20.

Clancey, William J.

Stanford University, CA. Department of Computer Science.

Jul 1986, 35p. For related reports, see ED 299 962-966.

SPONSORING AGENCY: Josiah Macy, Jr. Foundation, New York, N.Y.; Office of Naval Research, Arlington, Va. Personnel and Training Research Programs Office.
EDRS PRICE - MF01/PC02 plus postage.
DOCUMENT TYPE: Research Report (143)
MAJOR DESCRIPTORS: *Classification; *Computer System Design; *Expert Systems; *Heuristics; *Identification; *Programing
MAJOR IDENTIFIERS:*Rules Based Theory

This paper reviews the research leading from the GUIDON rule-based tutoring system, including the reconfiguration of MYCIN into NEOMYCIN and NEOMYCIN's generalization into the heuristic classification shell, HERACLES. The presentation is organized chronologically around pictures and dialogues that represent turning points and crystallize the basic ideas. Intended to collect important results in one place, the paper also makes some observations about research methodology, including abstracting or generalizing terminology to incorporate another specific domain, separating the domain model by identifying and justifying procedural sequences, and justifying domain relations in terms of underlying constraints and patterns. Twenty-two figures are provided. (41 references)

ED301176

Intelligent Tutoring Systems: A Tutorial Survey.

Clancey, William J.

Stanford University, CA. Department of Computer Science.

Sep 1986, 58p. For a related report, see ED 301 175.

SPONSORING AGENCY: Office of Naval Research, Arlington, Va. Personnel and Training Research Programs Office.
EDRS PRICE - MF01/PC03 plus postage.
DOCUMENT TYPE: Review Literature (070); Position Paper (120)
MAJOR DESCRIPTORS: *Computer Assisted Instruction; *Computer Simulation; *Expert Systems; *Man Machine Systems; *Models
MAJOR IDENTIFIERS: *Intelligent Tutoring Systems; *Learner Control

This survey of intelligent tutoring systems describes the components of these systems, different teaching scenarios, and the relation of these systems to a theory of instruction. It argues that the underlying pedagogical approach is to make latent knowledge manifest by using different forms of quantitative modeling: (1) simulating physical processes; (2) simulating expert problem solving, including strategies for monitoring and controlling problem solving (metacognition); (3) modeling the plans behind procedural behavior; and (4) forcing articulation of model inconsistencies through the Socratic method of instruction. Proceeding chronologically, examples of intelligent tutoring systems are described in terms of their internal knowledge representations and the evolving pedagogical theory. It also argues that, although these programs are generally only research projects, examples of what they can do make abundantly clear the long term scientific and software-engineering advantages of the new modelling methodology. The text is supplemented by 13 figures, and 31 references are provided.

ED301147

Qualitative Student Models.

Clancey, William J.

Stanford University, CA. Department of Computer Science.

May 1986, 84p. In: *Annual Review of Computer Science*, 1986, Volume 1, p.381-450.

SPONSORING AGENCY: Office of Naval Research, Arlington, Va. Personnel and Training Research Programs Office.

EDRS PRICE - MF01/PC04 plus postage.

DOCUMENT TYPE: Review Literature (070)

MAJOR DESCRIPTORS: *Artificial Intelligence; *Cognitive Structures; *Computer Assisted Instruction; *Instructional Design; *Models

MAJOR IDENTIFIERS: *Intelligent Tutoring Systems; *Interactive Computer Systems

The concept of a qualitative model is used as the focus of this review of qualitative student models in order to compare alternative computational models and to contrast domain requirements. The report is divided into eight sections: (1) *Origins and Goals* (adaptive instruction, qualitative models of processes, components of an artificial intelligence based instructional program, contrast with traditional computer assisted instruction, historical progression, and the range of existing programs); (2) *Scope of the Review* (review topics, important distinctions, relation to cognitive psychology, relation to other areas of artificial intelligence, and special emphases); (3) *The Role of Qualitative Models in Instruction* (explanation of qualitative models, situation-specific models, simulation or executable models, representation requirements, and the central role of diagnosis); (4) *Student Model Assessments*; (5) *Contrast between Formal and Physical Domains* (written notation and operators, subtraction compared to medical diagnosis, artifactual vs. natural functionality, and algorithmic vs. heuristic inference); (6) *Types of Qualitative Process Models* (process models of reasoning, behavioral vs. functional process models, levels of abstraction, idealized competence vs. individual models, computational representations for qualitative models, classification vs. simulation models of bugs, overlay vs. bug models, and pragmatic considerations); (7) *Constructing Situation-Specific Process Models* (simulate variations of the inference procedure, simulate variations in the program's general domain model, and derivation of the inference procedure); and (8) *Conclusions* (recapitulation, methodology, state of the art, and trends). A brief guide to the literature is included. (191 references)

ED305380

Reformulating Testing To Measure Thinking and Learning. Technical Report No. 6898.

Collins, Allan

Bolt, Beranek and Newman, Inc., Cambridge, MA.

Sep 1987, 33p.

SPONSORING AGENCY: Office of Naval Research, Arlington, VA. Personnel and Training Research Programs Office.

EDRS PRICE - MF01/PC02 plus postage.

DOCUMENT TYPE: Evaluative Report (142)

MAJOR DESCRIPTORS: *Cognitive Measurement; *Computer Assisted Testing; *Educational Testing; *Expert Systems; *Learning Strategies; *Testing Problems

MAJOR IDENTIFIERS: *Intelligent Tutoring Systems

This paper discusses systemic problems with testing and outlines two scenarios for reformulating testing based on intelligent tutoring systems. Five desiderata are provided to underpin the type of testing proposed: (1) tests should emphasize learning and thinking; (2) tests should require generation as well as selection; (3) tests should be integral to learning; (4) tests should serve multiple purposes; and (5) tests should be valid with respect to all their purposes. These desiderata are considered critical for a new, more benign learning and testing environment. In the first scenario outlined, intelligent tutoring systems become devices for administering problem-solving tests to students. The second, more radical scenario for an integrated testing and learning environment, is implicit in an analysis of learning in the LISP tutor. In this scenario, the computational medium enables evaluation to be conducted on the process of learning; rather than taking tests, the student is tested in the course of teaching. The report's distribution list is appended.

ED302181

The Augmentation System Framework.

Engelbart, Doug; Hooper, Kristina

Jun 1986, 18p. Paper presented at an Invitational Conference on Multimedia in Education (Cupertino, CA, June 19-20, 1986). In: *Learning Tomorrow: Journal of the Apple Education Advisory Council*, n3 p17-34 Spr 1987. For the complete journal, see ED 302 179.

EDRS PRICE - MF01/PC01 plus postage.

DOCUMENT TYPE: Journal Article (080); Conference Paper (150)

MAJOR DESCRIPTORS: *Computer Software; *Computer System Design; *Expert Systems; *Man Machine Systems

MAJOR IDENTIFIERS: *Software Development

Augmentation systems are composed of things that will add to what the human is genetically endowed with in order to extend the net capabilities that a human or human organization can apply to the problems or goals of human society. A broad brush categorization of the components of an augmentation system includes three distinct though interacting elements: language, artifacts, and methodology. The purpose of the methodology is to frame analysis, not to produce, dictate, or guarantee particular outcomes. It is important to acknowledge the difference between what software designers are doing on a day-to-day basis and what they could be doing. The key to the implementation of the augmentation approach is the development of "high performance teams," i.e., small groups to begin engaging organizational systems and learning how to do this effectively. (5 figures and 7 references)

ED307319

EXSPRT: An Expert Systems Approach to Computer-Based Adaptive Testing.

Frick, Theodore W.; And Others

Mar 1989, 37p. Paper presented at the Annual Meeting of the American Educational Research Association (San Francisco, CA, March 27-31, 1989).

EDRS PRICE - MF01/PC02 plus postage.

DOCUMENT TYPE: Research Report (143); Conference Paper (150)

MAJOR DESCRIPTORS: *Adaptive Testing; *Computer Assisted Testing; *Expert Systems; *Latent Trait Theory; *Mastery Tests

MAJOR IDENTIFIERS: *EXSPRT

Expert systems can be used to aid decision making. A computerized adaptive test (CAT) is one kind of expert system, although it is not commonly recognized as such. A new approach, termed EXSPRT, was devised that combines expert systems reasoning and sequential probability ratio test stopping rules. EXSPRT-R uses random selection of test items, whereas EXSPRT-I incorporates an intelligent selection procedure based on item utility coefficients. These two new methods are compared to the traditional SPRT and to an adaptive mastery testing (AMT) approach based on item response theory (IRT). Three empirical studies using different tests and examinees were conducted. Study 1 included samples of 25 and 50 current or former graduate students who took the Digital Authoring Language Test; Study 2 included samples of 25, 50, 75, and 100 students in an introductory graduate-level course; and Study 3 included 333 college freshmen and sophomores. Results indicate that the EXSPRT-I is more efficient or as efficient as is the AMT model. When the distribution of examinees was not clustered near the mastery cutoff, all four methods made accurate mastery classifications. Although further research is needed, the EXSPRT initially appears to be a strong alternative to IRT-based adaptive testing when categorical decisions about examinees are desired. The EXSPRT is less complex conceptually and mathematically; and it appears to require many fewer examinees to empirically establish a rule base, when compared to the large numbers required to estimate parameters for item response functions in the IRT model.

ED302186

Cicero: A Framework for Multimedia Projects for Classics.

Frischer, Bernard

Jun 1986, 16p. Paper presented at an Invitational Conference on Multimedia in Education (Cupertino, CA, June 19-20, 1986). In: *Learning Tomorrow: Journal of the Apple Education Advisory Council*, n3 p153-168 Spr 1987. For the complete journal, see ED 302 179.

EDRS PRICE - MF01/PC01 plus postage.

DOCUMENT TYPE: Journal Article (080); Conference Paper (150)

MAJOR DESCRIPTORS: *Ancient History; *College Instruction; *Computer Assisted Instruction; *Computer System Design; *Expert Systems; *Multimedia Instruction

This paper focuses on a short term plan for a computerized multimedia expert system in the field of the classics that is under development at the University of California at Los Angeles.

Noting both increased enrollments in classics courses and the problems associated with finding textbooks for courses in ancient civilizations that cover a variety of subjects, the paper describes the creation of a flexible three-part framework of software: (1) a core of multimedia databases; (2) an inner ring of scholarly utilities for using and modifying the databases; and (3) an outer ring of pedagogical applications, which use the scholarly utilities and databases. A sample lesson—an exploration of the city of Rome with a friendly student interface called "Cicero"—shows how the outer ring will be used in computer assisted instruction for students of classical civilization and Latin. A figure illustrates the organization of the software framework.

ED301876

Clues to Mode of Discourse.

Hartnett, Carolyn G.

Aug 1988, 35p. Revised version of paper presented at the International Systemic Congress (15th, East Lansing, MI, August 8-12, 1988).

EDRS PRICE - MF01/PC02 plus postage.

DOCUMENT TYPE: Conference Paper (150); Research Report (143)

MAJOR DESCRIPTORS: *Artificial Intelligence; *Computer Uses in Education; *Cues

MAJOR IDENTIFIERS: *Discourse Mode

A pilot study explored how to teach students to write thoughtfully, and also how to teach computers to recognize and interpret the kinds of thinking that appear in such writings. First, a taxonomy of mental processes was found, next the linguistic expressions (clues) that indicate the processes were hypothesized, and then a professionally-written corpus was selected and analyzed to see where the indications or clues would appear. Results showed that clues are related to mode rather than to a writer's peculiarities, and that writers can vary their writing styles. Results also showed that on a broad level, the hypothesized clues distinguish basic kinds of development of thought, separating those with an essential temporal orientation from those without it; and on a more specific level, that related analytic mental processes usually work together. (Five tables of data and one figure are included; 27 references are attached.)

ED297691

Artificial Intelligence.

Harvard University, Cambridge, MA. Office of Information Technology.

Win 1985, 41p. In: *Information Technology Quarterly*, v4 n4 Win 1985.

EDRS PRICE - MF01/PC02 plus postage.

DOCUMENT TYPE: Serial (022); Historical Material (060); Review Literature (070)

MAJOR DESCRIPTORS: *Artificial Intelligence; *Computer Science; *Expert Systems; *Technological Advancement

This issue of *Information Technology Quarterly* is devoted to the theme of "Artificial Intelligence." It contains two major articles: (1) "Artificial Intelligence and Law" (D. Peter O'Neill and George D. Wood); and (2) "Artificial Intelligence: A Long and Winding Road" (John J. Simon, Jr.). In addition, it contains two sidebars: (1) "Calculating and Searching"; and (2) "Cognitive Science and Artificial Intelligence (Donald S. Bradshaw). The issue is designed to provide a historical perspective as well as to describe some specific applications of artificial intelligence and expert systems. Issues addressed in the first article include a brief history of law and artificial intelligence; efforts to apply artificial intelligence to the field of law; artificial intelligence and legal reasoning; research into the cognitive processes of legal reasoning; Project PERICLES, a joint research endeavor between the Harvard Law School and Digital Equipment Corporation to study the uses of computer technology in the legal domain of landlord tenant law; and a description of cognition and law research. An expert system developed at Harvard (NOMOS—from the Greek concept of law) is described, including implementation methods, modules, and system integration. The second article provides a history of the mechanization of human thought, citing the work of Plato, Descartes, Pascal, Charles Babbage, H. P. Babbage, Alan Turing, Claude Shannon, and others who laid the ground work for today's principles of artificial intelligence. More recent research in the field by American scientists is also discussed, e.g., Alan Newell, Herbert Simon, J. C. Shaw, John McCarthy, Marvin Minsky, Roger Schank, and Robert Wilensky. Several expert systems are also described. Each article includes its own list of references.

ED304483

The Development of CAI: An Expert System in Education.

Kaiser, Javaid

[1985], 34p.

EDRS PRICE - MF01/PC02 plus postage.

DOCUMENT TYPE: Project Description (141)

MAJOR DESCRIPTORS: *Computer Assisted Instruction; *Courseware; *Expert Systems; *Programing Languages; *Technological Advancement

A brief overview of computer-assisted instruction (CAI) is provided. The history and theoretical framework of CAI and typical developmental stages involved in the implementation of a CAI system are outlined. The way CAI determines background knowledge of a student, presents information necessary to learn new concepts, sets its pace according to student needs, reinforces previous learning, and evaluates student performance qualifies it as an expert system. Developmental stages covered include: (1) conceptualization (development of project rationale); (2) design (development of behavioral objectives, choice of a learning theory, selection of content and instructional models, development of means of sequencing instruction and presenting materials, student support requirements, measurement of student performance, selection of computer language/program, development of means of selecting an "authoring system," and validation of design); and (3) implementation (coding in suitable author language, testing of the system to determine whether it meets product specifications, determination of overall instructional value of the CAI system, and marketing). Advantages and unresolved issues related to CAI are discussed.

ED299954

From Concept Maps to Computer Based Learning: The Experience of NoteCards.

McAleese, Ray

Apr 1988, 24p. Paper presented at the Annual Meeting of the American Educational Research Association (New Orleans, LA, April 5-9, 1988).

EDRS PRICE - MF01/PC01 plus postage.

DOCUMENT TYPE: Project Description (141); Conference Paper (150)

MAJOR DESCRIPTORS: *Cognitive Style; *Computer Assisted Instruction; *Computer Software; *Computer System Design; *Expert Systems

MAJOR IDENTIFIERS: *Concept Maps; *Hypertext

This paper begins with a description of the context and background of cognitive research into knowledge acquisition and representation for computer based training. The nature of concept maps is alluded to and examples are given of the ways that maps can facilitate knowledge elicitation. It is noted that: (1) the concept knowledge in this research is acquired and reported by a hypertext system called NoteCards; (2) NoteCards is used as a pre-processor to computer based training applications, and the metaphorical structure created by NoteCards and displayed to browsers is used in hypertext navigation; and (3) visual examples of concepts are held on a videodisc attached to the workstation that runs NoteCards. It is concluded that NoteCards provides a useful environment for experimenting with knowledge elicitation and providing a trainee/learner-based interrupt interface to computer based training. The six figures provided include concept maps, an equipment layout diagram, and a hypertext explanation and video picture. (19 references)

ED308693

Cognitive Models of Students' Language Structure: The View from Intelligent Computer Assisted Instruction.

Psotka, Joseph; And Others

15 Sep 1988, 34p. Paper presented at the Interagency Language Roundtable Invitational Symposium on Language Aptitude Testing (Rosslyn, VA, September 14-16, 1988). Some graphics may not reproduce clearly.

EDRS PRICE - MF01/PC02 plus postage.

DOCUMENT TYPE: Evaluative Report (142); Conference Paper (150)

MAJOR DESCRIPTORS: *Artificial Intelligence; *Computer Assisted Instruction; *Individualized Instruction; *Language Processing; *Programing

MAJOR IDENTIFIERS: *Army Research Institute; *Hypertext

Methods and approaches used at the U.S. Army Research Institute to investigate intelligent computer-assisted foreign language instruction are discussed. The research described explores the use of hypertext and natural language processing for improving language training by articulating student knowledge structures and for providing, incidentally, a new basis for aptitude testing. The techniques being implemented model the cognitive skills underlying foreign language competence by using computational linguistic models and semantic networks built into hypertext systems. It is proposed that these techniques could be useful for assessing basic language competence. Aspects of the research and related technology are examined: intelligent tutoring systems, the expert model and second language learning, student (trainee) models and language aptitude testing, the pedagogical model, the knowledge base, the interface, hypertext systems and command menus, smart computer-assisted language learning environments, grammars and grammar representations, parsing strategies, using grammars for computer-assisted language learning, use and adaptation of specific software packages, immersion techniques, and semantic mapping.

ED306945

Artificial Intelligence in Education.

Ruyle, Kim E.

Aug 1988, 5p.

EDRS PRICE - MF01/PC01 plus postage.

DOCUMENT TYPE: Position Paper (120); Project Description (141)

MAJOR DESCRIPTORS: *Artificial Intelligence; *Authoring Aids (Programing); *Expert Systems; *Individualized Instruction; *Microcomputers; *Problem Solving

Expert systems have made remarkable progress in areas where the knowledge of an expert can be codified and represented, and these systems have many potentially useful applications in education. Expert systems seem "intelligent" because they do not simply repeat a set of predetermined questions during a consultation session, but will have a reason for each question asked based on answers given to previous questions. Simple expert systems can now be created by individuals with little programming experience using authoring tools. Microcomputer-based expert systems provide an affordable way to solve meaningful problems and enhance the problem solving abilities of individuals and organizations. Expert systems can be used in the classroom or laboratory by providing individual consultation sessions with students. Great flexibility is possible with expert systems because a knowledge base embedded in a system is easily modified and expandable. These "intelligent" tutors will develop an internal model of a student and then adapt the instructional technique to fit that individual. In addition, older workers seeking retraining might respond especially well to interacting with an expert system in an on-the-job training program. In the future expert systems will assist administrators with scheduling, budgeting, and program evaluation. The next few years will be interesting and full of opportunities for educators applying artificial intelligence tools in their field. (8 references)

ED307196

Microcomputer-Based Intelligent Tutoring Systems: An Assessment.

Schaffer, John William

1988, 18p.

EDRS PRICE - MF01/PC01 plus postage.

DOCUMENT TYPE: Project Description (141)

MAJOR DESCRIPTORS: *Computer Assisted Instruction; *Expert Systems; *Instructional Innovation; *Microcomputers; *Music; *Music Education

MAJOR IDENTIFIERS: *Intelligent Tutoring Systems

Computer-assisted instruction, while familiar to most teachers, has failed to become an effective self-motivating instructional tool. Developments in artificial intelligence, however, have provided new and better tools for exploring human knowledge acquisition and utilization. Expert system technology represents one of the most promising of these developments. Expert systems are computer programs that store human-like knowledge. Methods of expert system design are discussed, as are ways of computing propositional and predicate logic. "Harmony Coach" (written in Turbo Prolog) is an intelligent tutoring system that uses the microcomputer environment (IBM PC, XT, AT) to coach the specific musical tasks of writing tonal harmonic progressions, aiding the student in the creation of an acceptable harmonic sequence based on either an unfigured bass line or on a melody. It also coaches students in part-writing any previously harmonized exercises using the traditional four-part chorale model. The "Coach" is designed around the following premises, most of which are essential to any intelligent tutoring system: it must be based on sound musical precepts; it should operate in a passive role; hardware aspects should be transparent to the end user; it should use artificial intelligence whenever possible; it should embrace knowledge, explanative understanding, and problem-solving abilities; and it must run under normal restrictions of a high-end microcomputer learning environment. These precepts are explored in detail. Strengths and weaknesses of the program are discussed and a 7-item bibliography is included.

ED308847

Educational Research and Theory Perspectives on Intelligent Computer-Assisted Instruction.

Tennyson, Robert D.; Christensen, Dean L.

Feb 1989, 15p. In: *Proceedings of Selected Research Papers Presented at the Annual Meeting of the Association for Educational Communications and Technology (Dallas, TX, February 1-5, 1989).* For the complete proceedings, see ED 308 805.

EDRS PRICE - MF01/PC01 plus postage.

DOCUMENT TYPE: Position Paper (120); Conference Paper (150)

MAJOR DESCRIPTORS: *Computer Assisted Instruction; *Expert Systems; *Individual Differences; *Instructional Design; *Learning Theories

MAJOR IDENTIFIERS: *Intelligent CAI Systems

This paper defines the next generation of intelligent computer-assisted instructional systems (ICAI) by depicting the elaborations and extensions offered by educational research and theory perspectives to enhance the ICAI environment. The first section describes conventional ICAI systems, which use expert systems methods and have three modules: a knowledge base, a student model, and a tutor model. The second section discusses the ICAI system of the future—a system that elaborates and extends the three basic modules of the conventional ICAI system—and explains how the future system will integrate artificial intelligence (AI) tools and methods with instructional variables and conditions empirically tested and shown to improve learning. It is concluded that the next generation ICAI will use a comprehensive meta-learning model which would take individual differences into account in the assessment and diagnosis processes, and make reference to both the learner's acquisition (i.e., storage) and retrieval of knowledge; it will select the strategies of instruction from a rich base of instructional variables according to learning objectives and the structure of the information to be learned; and it will use the concepts of artificial intelligence in the form of heuristics that have the capacity to learn and to adjust according to given situations. Some examples of major advantages that may result from the use of the next generation ICAI system conclude the paper. (18 references)

ED302183

As We May Learn.

Weyer, Stephen A.

Jun 1986, 21p. Paper presented at an Invitational Conference on Multimedia in Education (Cupertino, CA, June 19-20, 1986). In: *Learning Tomorrow: Journal of the Apple Education Advisory Council*, n3 p89-109 Spr 1987. For the complete journal, see ED 302 179.

EDRS PRICE - MF01/PC01 plus postage.

DOCUMENT TYPE: Journal Article (080); Conference Paper (150)

MAJOR DESCRIPTORS: *Expert Systems; *Information Retrieval; *Man Machine Systems; *Multimedia Instruction; *User Needs (Information)

MAJOR IDENTIFIERS: *Intelligent Tutoring Systems

Using as a backdrop Vannevar Bush's 1945 discussion of the "Memex," his proposed system for organizing and storing information, this paper considers the development of intelligent multimedia knowledge systems. Particular attention is focused on learner needs and intentions in information seeking, and the implications of these factors for the development of intelligent multimedia knowledge systems are considered. The importance of a user-oriented information system is stressed. The paper concludes with a discussion of the possibility of creating hypermedia systems that go beyond the improvement of searching and browsing techniques to create intelligent systems that might almost emulate expert human behavior. (3 figures and 11 references)

Computer Equity

ED301180

Inequities in the Computer Classroom: An Analysis of Two Computer Courses.

Alspach, Phyllis A.

Jul 1988, 74p. Exit Project, Indiana University at South Bend.

EDRS PRICE - MF01/PC03 plus postage.

DOCUMENT TYPE: Research Report (143); Dissertation (040)

MAJOR DESCRIPTORS: *Academic Achievement; *Computer Literacy; *Computer Science Education; *High School Students; *Mathematics Achievement; *Sex Differences

This study analyzed the enrollment of two computer classes at a public high school in northern Indiana to see if there was any computer inequity. The two classes examined—an introduction to computers course and a computer programming course—were studied over a period of four years. The sample consisted of 388 students in four years of the introductory course and 127 students in four years of the programming course. The variables analyzed for each student were sex, year in school, race, grade in computer class, mathematics course taken either previously or simultaneously with computer class, grade in that mathematics course, and a composite raw score from the Metropolitan Achievement Test given in the 9th grade. The sample size was too small to permit an analysis on the basis of race. Analysis of the data showed the possibility of an increase or at least a stabilization of the enrollment in the two courses. Each year there were more females than males in the introductory course, but more males than females in the programming course. There was no statistically significant difference between the computer grades of males and females. The two classes were reaching mostly intermediate- and high-level mathematics students, but there were also some basic-level students enrolled in the two courses. There were statistically significant positive correlations between the computer grade and both the mathematics grade and the composite achievement score. Some inequities in enrollment were found in gender, year in school, and mathematics, but determination of whether these differences posed a problem were beyond the scope of this study. Of the 25 hypotheses tested by this study, eight were retained. An appendix contains the data examined in the study, and 14 references are provided.

ED308806

Gender Differences in the Selection of Elective Computer Science Courses.

Arenz, Bernard W.; Lee, Miheon J.

Feb 1989, 33p. In: *Proceedings of Selected Research Papers Presented at the Annual Meeting of the Association for Educational Communications and Technology (Dallas, TX, February 1-5, 1989).* For the complete proceedings, see ED 308 805.

EDRS PRICE - MF01/PC02 plus postage.

DOCUMENT TYPE: Research Report (143); Conference Paper (150); Test, Questionnaire (160)

MAJOR DESCRIPTORS: *Computer Science Education; *Elective Courses; *Secondary School Students; *Sex Differences

Two studies—conducted in 1987 and 1988 in high schools in the Madison, Wisconsin, Metropolitan School District—investigated the existence of gender related differences in high school elective computer courses and factors affecting the differences. In the first study, a two-part survey was administered to the total population of students enrolled in high school elective computer courses. One hundred sixty-six students (104 males, 62 females) responded to the questionnaire, which addressed attitudes toward computer use. Chi-square test of population and analysis of variance (one way ANOVA) were used to analyze results, which indicated that the differences between males and females in beginning and intermediate classes were most apparent in the role models available to the students, sex bias, and their view of gender differences. The general attitude of the students, perceived usefulness, and self-confidence in use of computers did not produce significant differences. The second study was conducted as a follow-up to extend these findings. Students who were not enrolled in computer courses as well as the students enrolled in computer courses were surveyed. Three hundred twenty-eight (195 males, 133 females) responded to the two-part questionnaire, and the Mann-Whitney U test was used to determine any differences between the two groups of students. Plans for taking a computer course after high school or for having a computer related job, perceived usefulness of computers, general attitudes toward computers, and confidence with computers were all more positive for computer course students and those who intend to take a computer course. Four appendixes contain charts and tables displaying the results of the data analyses, responses to interview questions, and a copy of the computer survey questionnaire. (22 references)

ED306951

Inequalities in Classroom Computer Software.

Biraimah, Karen

Feb 1989, 16p. Paper presented at the Annual Meeting of the Eastern Educational Research Association (Savannah, GA, February 22-25, 1989).

EDRS PRICE - MF01/PC01 plus postage.

DOCUMENT TYPE: Evaluative Report (142); Conference Paper (150)

MAJOR DESCRIPTORS: *Courseware; *Equal Education; *Ethnic Bias; *Sex Bias; *Socioeconomic Status

MAJOR IDENTIFIERS: *Software Evaluation

Biases based on gender and ethnicity in computer software available to schools were investigated in this study. A random sample of 15 software programs were selected and evaluated on the bases of gender and ethnicity. Data were gathered on the number of male and female characters portrayed and on the cross-cultural dimensions of the software in order to determine if it would appeal to a cross section of children from varying backgrounds, or whether it had been prepared with a particular audience in mind, e.g., Anglo-Saxon males. The data showed that, from a quantitative perspective, patterns of gender and ethnic imbalance previously documented in textbooks are also present in current educational software available to students. Of the 1,942 characters noted in the graphics and text of the evaluated software, 63% were males and only 3% of the characters could be identified as ethnic. In order to clearly understand the dimensions of these biases, a quantitative examination of the roles and activities found within the software was undertaken. Similar ethnicity and gender trends were found, with males dominating the character roles (63%) while observable ethnic characters were limited to only 3%. When these roles and activities were divided into separate categories, males were portrayed in more categories, and as more active characters, including adventure, military, and science and technology roles, while females were limited to 41 more passive roles. Ethnic roles were also limited, but ethnic female roles were even more limited than ethnic males roles. (5 tables, a list of the 15 evaluated software packages, and 6 references)

ED307859

Sex and Ethnic Group Differences in High School Students' Computer Attitudes and Computer Attributions.

Campbell, N. Jo; Perry, Katye M.

[1988], 20p. For a related paper, see ED 307 857.

EDRS PRICE - MF01/PC01 plus postage.

DOCUMENT TYPE: Position Paper (120); Research Report (143)

MAJOR DESCRIPTORS: *Attribution Theory; *Computer Uses in Education; *Ethnic Groups; *High School Students; *Sex Differences; *Student Attitudes

The attitudes of high school students toward the use of microcomputers were examined in terms of causal attributions, i.e., student perceptions of the causes of academic performance. The subjects for the study were 171 male and female students, representing 102 white and 69 minority students who were enrolled in a large city high school. The majority of these students had already completed computer coursework or had other previous computer experience. Two scales, the Computer Attitude Scale and Computer Attribution Scale, were developed from the Fennema-Sherman Mathematics Attitude Scale and the Mathematics Attribution Scale of Fennema, Wolleat, and Pedro, respectively, in order to examine the use and study of computers in this population. The primary focuses of this study—sex and ethnic differences in computer attitudes and computer attributions—were investigated using the multivariate analysis of variance technique. Results indicated that: (1) while there were no ethnic group differences in high school students' attributions of success or failure in using computers, there were significant sex differences in computer attributions, with males attributing their successes in using computers to their own abilities, and females attributing their success to uncontrolled environmental factors; (2) all groups involved had fairly positive attitudes toward computers; (3) both sex and ethnic group differences existed in computer attitudes, with white students perceiving computers as more enjoyable and challenging than minority students, and male students and white students tending to have a more positive attitude toward learning computer skills than female and minority students. Three tables are appended. (39 references)

ED297725

A Multidimensional Study of Adolescent Gender Differences in Computer Use and Impact.

Collis, Betty; And Others

Apr 1988; 31p.; Paper presented at the Annual Meeting of the American Educational Research Association (New Orleans, LA, April 5-9, 1988). For a related paper, see ED 297 724.

EDRS PRICE - MF01/PC02 plus postage.

DOCUMENT TYPE: Research Report (143); Conference Paper (150)

MAJOR DESCRIPTORS: *High School Students; *Microcomputers; *Predictor Variables; *Sex Differences; *Student Attitudes; *Use Studies

MAJOR IDENTIFIERS: *Access to Computers

The interactions between computer use and access by adolescents and their computer related opinions and values are presented in the framework of a "manifold model" of computer interactions. This model emphasizes the complexity and multidimensional nature of the system of variables in which such interaction is embedded. For this study, the association between gender and various usage and attitude variables was predicted by the model and tested with data from a representative survey of urban grade 11 students involving over 3,000 students from major urban areas in all 10 Canadian provinces. Analyses of the data reveal consistent gender differences in access to and usage of computers in each of three usage categories—recreational, home non-recreational, and school—as well as in attitudinal variables associated with computer use in each of the usage categories. The theoretical importance of the study is found in the support the study gives to the multidimensional manifold model as a descriptor of the complex system surrounding adolescents' computer-related activities and opinions. The results indicate that it is inappropriate to make statements about what influences male and female adolescents to use or reject computers without considering the context of the usage. The text is supplemented by five tables and eight figures. (7 references)

ED304130

Beyond the Star Trek Syndrome to an Egalitarian Future: "Where No One Has Gone Before." PEER Computer Equity Report.

Cusick, Theresa; And Others

NOW Legal Defense and Education Fund, Washington, DC. Project on Equal Education Rights.

1986, 13p. The second in a series of Computer Equity Reports.

AVAILABLE FROM: PEER/NOW, 1333 H Street NW, Washington, DC 20008 ($5.00).

EDRS PRICE - MF01 plus postage. PC not available from EDRS.

DOCUMENT TYPE: Review Literature (070); Position Paper (120)

MAJOR DESCRIPTORS: *Computer Literacy; *Equal Education; *Females; *Programing; Public Schools; *Sex Bias; *Sex Differences

MAJOR IDENTIFIERS: *Computer Equity

This examination of computer equity argues that current educational trends—which emphasize teaching applications of computers rather than programming—will limit the computer skills of students. Added to this difficulty is the argument that some students (often minority and female students) need not be pushed to learn programming if they don't wish to do so. It is suggested that a commitment to equal access requires that such choices, between applications and programming, should not be made for students based on their apparent lack of interest or sex-based stereotyping. Various strategies for breaking down the programming barrier are discussed, and the importance of advanced computer skills for jobs of the future is stressed. Three recommendations to enhance computer equity are made: (1) computer literacy instruction should be required for all students, and should include programming, applications, and discussions of the political and ethical issues surrounding the uses of technology; (2) all students should have equal access to computers both in school and at home; and (3) activities both inside and outside the classroom should be provided to overcome the effects of sex- and race-stereotyped assumptions about computers. (84 references)

ED302334

Sex Typing of Young Children's Behaviours in a Computer Active Preschool Classroom. Project Report: A Working Paper.

Elliott, Alison

Jun 1988, 18p. Paper presented at the National Educational Computing Conference (Dallas, TX, June 15-17, 1988).

EDRS PRICE - MF01/PC01 plus postage.

DOCUMENT TYPE: Research Report (143); Conference Paper (150)

MAJOR DESCRIPTORS: *Childhood Attitudes; *Learning Centers (Classroom); *Microcomputers; *Play; *Preschool Children; *Sex Stereotypes

MAJOR IDENTIFIERS: *Australia

Outlined are preliminary findings from a study of computer use by Australian preschool children. Subjects were 90 children of 4 years who were enrolled in four Sydney preschool classes. A computer was set up in a learning center and was available to the children during free play sessions. Children's behaviors were observed and recorded as the children used a drawing program and a single key stroke version of Logo with a floor "turtle." Observations took place over a 5- to 6-week period. Reported results focus on: (1) computing knowledge, attitudes, and experience; (2) expressed play preferences; (3) frequency and duration of computer play; and (4) play style in the computer area. Findings suggest that 4-year-old children may already be seeing the use of computers in society and the classroom as a male-oriented activity. The possible sex typing of computing and computer-based activities at such an early age has several implications that are related to the development of differential skills, attitudes, outlooks, and future goals. It is concluded that early childhood educators need to take action to encourage more gender equitable participation and experience in computer use.

ED303157

Sharpening the Issues and Shaping the Policies: The Role of the New Information Media and Technology within the U.S. Hispanic Community. Revised Version.

Ingle, Henry T.

Tomas Rivera Center, Claremont, CA.

Aug 1988; 25p.

AVAILABLE FROM: The Tomas Rivera Center, Claremont Graduate School, 710 N. College Avenue, Claremont, CA 91711 ($6.00).
EDRS PRICE - MF01 plus postage. PC not available from EDRS.
MAJOR DESCRIPTORS: *Hispanic Americans; *Information Technology; *Mass Media; *Microcomputers; *Policy Formation; *Videotape Cassettes

This paper summarizes the research and practice associated with the use of new information media and technology with Hispanic populations in the United States, and presents a case for making effective use of communications tools such as the microcomputer and videocassette recorders for improving the educational level and socioeconomic status of Hispanic populations. References are made to the growing size of the Hispanic populations in the United States, and their likely development into a majority population by the year 2015 and beyond. (66 references)

ED303353

Sex and Ethnic Differences in Middle School Mathematics, Science and Computer Science: What Do We Know? A Report.

Lockheed, Marlaine E.; And Others

Educational Testing Service, Princeton, N.J.

May 1985, 194p.

SPONSORING AGENCY: Ford Foundation, New York, N.Y.
AVAILABLE FROM: Educational Testing Service, CC6121, Princeton, NJ 08540 ($6.50).
EDRS PRICE - MF01/PC08 plus postage.

DOCUMENT TYPE: Project Description (141); Research Report (143)
MAJOR DESCRIPTORS:*Computer Science Education; *Ethnic Groups; *Mathematics Education; *Minority Groups; *Science Education; *Sex Differences
MAJOR IDENTIFIERS: *Ethnic Differences

During the past several years considerable national-level attention has been focused on the state of American public education in mathematics, science and technology. There is, among the several policy reports, substantial agreement that student achievement levels in mathematics are lower than is desirable and the opportunity to learn mathematics, science and technology is at present not fairly and evenly provided to all students. In particular, large numbers of minority youngsters and those who go to inner-city schools are below grade level in mathematics achievement by grade five. Girls, too, show disparities in interest, participation and achievement, but for different reasons. The situation for minority girls is even more complex. The goal of this study was to conduct a comprehensive review of the research and intervention literature on math, science and computer learning among girls, minority students and inner-city students in grades four through eight. Chapters concern: (1) the studies used in this report; (2) differences and similarities in participation; (3) differences and similarities in performance; (4) factors related to performance and participation; (5) intervention programs; and (6) summary and recommendations. Appendices include lists and tables of meta-analysis, a directory of intervention programs, and a bibliography of 290 references on this topic.

ED301469

A Commentary on Gender Differences.

Morrow, Dallas; Goertzen, Sandi

Manitoba Dept. of Education, Winnipeg. Planning and Research Branch.

Dec 1986, 13p.

EDRS PRICE - MF01/PC01 plus postage.
DOCUMENT TYPE: Research Report (143)
MAJOR DESCRIPTORS: *Computer Literacy; *Females; *Science Instruction; *Sex Differences; *Teaching Methods
MAJOR IDENTIFIERS: *Manitoba

The development of knowledge and skills in the areas of mathematics, science, and computers is considered to be important for all students, both males and females. These subjects are prerequisites for many postsecondary education programs. Some of the most highly paid sectors of the labor market are those which require math, science, and computer knowledge. The importance of these fields in a person's everyday life should not be underestimated. Women tend to be under-represented in these fields. This paper provides an overview of this issue and a description of what is known about the situation in the province of Manitoba. Discussions in this report center around enrollment, achievement, and social factors. A list of six suggestions to improve the situation is included.

ED298946

Turing's Man, Turing's Woman, or Turing's Person?: Gender, Language, and Computers. Working Paper No. 166.

Rothschild, Joan

Wellesley College, MA. Center for Research on Women.

1986, 15p.

EDRS PRICE - MF01 plus postage. PC not available from EDRS.

DOCUMENT TYPE: Review Literature (070); Position Paper (120)

MAJOR DESCRIPTORS: *Computers; *Language Usage; *Man Machine Systems; *Sex Fairness

This essay compares two recent books on computer technology in terms of their usage of gendered or gender-free language. The two books examined are *Turing's Man: Western Culture in the Computer Age* by J. David Bolter and *The Second Self: Computers and the Human Spirit* by Sherry Turkle. It is argued that the two authors' gender differences in language usage and style (with Bolter using gendered language, and Turkle using gender-free language) reveal gendered differences in approach to subject matter, questions asked, content, and cultural and philosophical assumptions. The impact of this critique for teaching is examined, with specific consideration of use of the critique for raising gender issues in the classroom. (7 end notes and 21 references)

Computer Literacy

ED306534

Research on Computer-Based Education for Reading Teachers: A 1989 Update. Results of the First National Assessment of Computer Competence.

Balajthy, Ernest

May 1989, 9p. Paper presented at the Annual Meeting of the International Reading Association (34th, New Orleans, LA, April 30-May 4, 1989).

EDRS PRICE - MF01/PC01 plus postage.

DOCUMENT TYPE: Conference Paper (150); Evaluative Report (142)

MAJOR DESCRIPTORS: *Computer Literacy

MAJOR IDENTIFIERS: *National Assessment of Educational Progress; *Student Surveys

Results of the 1985-86 National Assessment of Educational Progress (NAEP) survey of American students' knowledge of computers suggest that American schools have a long way to go before computers can be said to have made a significant impact. The survey covered the 3rd, 7th, and 11th grade levels and assessed competence in knowledge of computers, computer applications, and computer programming. Results indicated a widespread lack of familiarity with computer applications and programming as well as an emphasis on teaching programming rather than using computers in subject areas such as reading and English. Results also showed that roughly 30% of students had access to computers at home, but that socioeconomic factors played a disturbing role in limiting minority students' access to computers. Despite the overall poor results, the rumored stall in the "computer revolution" disappears upon close examination. The NAEP results are 2 years old, based on generally unreliable self-report information, derived from a multiple choice test in a field which is primarily "hands on." The report's general conclusions are also heavily weighted by the computer programming section, but general computer literacy is unrelated to knowledge of computer programming. The computer revolution may be a growing surge rather than an explosion.

ED301183

Microcomputers: Developing Teacher Confidence and Management Skills.

Bean, Barbara L.

6 Apr 1988, 8p. Paper presented at the Annual Meeting of the American Educational Research Association (New Orleans, LA, April 5-9, 1988).

EDRS PRICE - MF01/PC01 plus postage.

DOCUMENT TYPE: Research Report (143); Conference Paper (150)

MAJOR DESCRIPTORS: *Classroom Techniques; *Cognitive Style; *Computer Literacy; *Inservice Teacher Education; *Preservice Teacher Education; *Teacher Attitudes

This report explores teacher computer education through a comparison of two investigations of computer confidence in teachers: (1) taped interviews with preservice teachers and observations of their attitudes and teaching behaviors as they presented classroom and computer activities as student teachers; and (2) an overview of the development of a successful computer education program in a large urban school district, which reinforced the findings of the first study with practical applications at the teacher inservice level. The preservice teachers were also tested with several cognitive and learning style instruments to increase their understanding of their teaching/learning style. The first study found that computer use in the classroom was related to teachers' knowledge of basic computer operation, computer support, computer availability, classroom management skills, and personal commitment. Grade level and classroom structure (formal versus informal) were not factors in the successful implementation of computer activities. Both computer education studies showed the necessity of presenting computer activities in a manner that is meaningful to the teacher to prevent the anxiety or stress that new technologies may produce.

ED301457

Microcomputer Applications in the Elementary Classroom. A Guide for Teachers.

Bright, George W.

1987, 204p. Charts and drawings may not reproduce well.

REPORT NO.: ISBN-0-205-10454-1

AVAILABLE FROM: Allyn & Bacon/Logwood Division, 160 Gould Street, Needham Heights, MA 02194-2310 ($28.95, 20% off 10 or more).

EDRS PRICE - MF01 plus postage. PC not available from EDRS.

DOCUMENT TYPE: Book (010); Teaching Guide (052)

MAJOR DESCRIPTORS: *Computer Literacy; *Computer Science Education; *Computer Uses in Education; *Elementary School Mathematics; *Elementary School Science; *Microcomputers

There is a serious risk that the extra burden of adding instruction about microcomputers and software to regular elementary school curricula may turn off both teachers and students to the potential that microcomputers have for improving learning. To counter this risk, microcomputers should be integrated into the regular instructional program of elementary schools. This book is primarily intended for elementary school teachers who already have some experience with microcomputers but no expertise is assumed. Following an introduction to education with computers, many applications and issues are discussed, including: (1) programs for drill and practice; (2) tutorials; (3) games; (4) simulations; (5) computer error diagnosis; (6) instructional software evaluation; (7) programming; (8) problem solving; (9) word processing; (10) computer literacy; and (11) administrative uses of microcomputers. This publication contains 109 references.

ED301179

The Impact of Schoolwide and Classroom Elements on Instructional Computing: A Case Study.

de Acosta, Martha C.

Apr 1988, 47p. Paper presented at the Annual Meeting of the American Educational Research Association (New Orleans, LA, April 5-9, 1988).

EDRS PRICE - MF01/PC02 plus postage.

DOCUMENT TYPE: Research Report (143); Conference Paper (150)

MAJOR DESCRIPTORS: *Adoption (Ideas); *Classroom Techniques; *Computer Literacy; *Instructional Innovation; *Program Implementation

This paper describes the implementation of educational computing in three schools located in the suburban belt of a large metropolis. One school included grades K-6; one grades 5-6; and one grades 7-8. The schools were similar in that they were well financed and the staff and students felt they were doing well; however, they were different in the ethnic composition and socioeconomic level of their student bodies. All three schools provided inservice training for their teachers and purchased hardware and software. It was found that the distinctive features of each school conditioned the extent of computer use and shaped the form and substance of the educational computing program at the initial stages of implementation. The strongest determinants of the kind of computer activities implemented and the relationship between computer activities and other school work were found to be the staff's perceptions of the student body and what constitutes legitimate school knowledge, together with the style of student supervision. (30 references)

ED305901

Technological Literacy: More than Computer Literacy.

Dyrenfurth, Michael J.; Mihalevich, J. Richard

Nov 1987, 30p. Paper presented at the National School Boards Association Conference (Dallas, TX, November 5-7, 1987).

EDRS PRICE - MF01/PC02 plus postage.

DOCUMENT TYPE: Position Paper (120); Research Report (143); Conference Paper (150)

MAJOR DESCRIPTORS: *Computer Literacy; *Educational Policy; Models; *Outcomes of Education; *Technological Advancement; *Technological Literacy

MAJOR IDENTIFIERS: *Technology Education

This paper explores common misconceptions about technological literacy and technology education, proposes a model for technological literacy, and considers the implications of technology-induced changes for education. The model consists of three key dimensions that define technological literacy and guide programming for it: (1) technology's components; (2) desired educational outcomes; and (3) levels of technological literacy. A detailed examination of these three dimensions is made, and a comprehensive model of technological literacy is presented which incorporates the three key dimensions. Applications of the model are then considered, and a discussion of the implications of technological change for educational policy concludes the paper. The text is supplemented by nine figures, and two appendices provide a list of characteristics of technologically literate people and operational definitions of 12 technology-related terms. (80 references)

ED297740

Information Skills for an Information Society: A Review of Research. An ERIC Information Analysis Product.

Kuhlthau, Carol Collier

ERIC Clearinghouse on Information Resources, Syracuse, N.Y.

1987, 34p.

SPONSORING AGENCY: Office of Educational Research and Improvement (ED), Washington, DC.

AVAILABLE FROM: Information Resources Publications, 030 Huntington Hall, Syracuse University, Syracuse, NY 13244-2340 (IR-74; $5.00 plus $1.50 shipping and handling).

EDRS PRICE - MF01/PC02 plus postage.

DOCUMENT TYPE: Review Literature (070); ERIC Product (071)

MAJOR DESCRIPTORS: *Computer Literacy; *Course Integrated Library Instruction; *Functional Literacy; *Information Technology; *Library Skills; *Media Specialists

MAJOR IDENTIFIERS: *Information Literacy

This review of the research literature describes and discusses functional/information literacy in the age of computers and the resulting "information explosion," together with means by which students can become competent information users in the future and be enabled to lead productive, meaningful lives. Defined as comprising library skills and computer literacy, information literacy is discussed in relationship to school media centers, which have become key places for integrating skills and resources with subjects across the curriculum, and allowing students to develop proficiency in inquiry. This study summarizes information technologies useful in schools and reviews international information literacy programs to provide insights into ways that administrators, teachers, and library media specialists can work together to prepare students to meet the challenges of the information age. Included in the discussion are (1) definitions and characteristics of information literacy; (2) the library media center as information center; (3) integrating information skills with the curriculum; (4) information technologies in schools; and (5) means of achieving information literacy. It is concluded that competent use of information can offer beneficial results to society-at-large, and that, conversely, information illiteracy can cause harm to individuals and to society. (75 references)

ED304101

Microcomputers in Education: An Annotated Bibliography of Educational Resources Center Materials.

Leavy, Rebecca S.

Sep 1988, 44p.

EDRS PRICE - MF01/PC02 plus postage.

DOCUMENT TYPE: Bibliography (131)

MAJOR DESCRIPTORS: *Classroom Techniques; *Computer Literacy; *Computer Software; *Instructional Materials; *Microcomputers

MAJOR IDENTIFIERS: *Software Evaluation; *Western Kentucky University

This annotated bibliography is a listing of both book and non-book materials in the collection at the Educational Resources Center at Western Kentucky University that relate to using microcomputers in education. These materials are primarily concerned with locating, selecting, and evaluating appropriate software; implementation of a microcomputer program in schools; computer literacy programs; and how microcomputers may be used in particular subject areas. Also included are several books on elementary programming in various microcomputer languages, as well as a number of children's books located in the center's juvenile collection. Provided with each entry are bibliographic information, the call number, library document number, and a brief annotation. The annotations (statements of goals, objectives, purposes) were most often taken from prefaces, introductions, or forewords. All materials may be borrowed by persons holding Kentucky University identification cards or Special Borrower's cards, or through the University's Interlibrary Loan Department.

ED303139

A Model Computer Literacy Course.

Orndorff, Joseph

[1988], 8p.

EDRS PRICE - MF01/PC01 plus postage.

DOCUMENT TYPE: Teaching Guide (052); Position Paper (120)

MAJOR DESCRIPTORS: *College Students; *Computer Literacy; *Individualized Instruction; *Instructional Design

Designed to address the varied computer skill levels of college students, this proposed computer literacy course would be modular in format, with modules tailored to address various levels of expertise and permit individualized instruction. An introductory module would present both the history and future of computers and computing, followed by an overview of computer hardware, software, and basic concepts and phrases. Students would then be introduced to basic MS-DOS commands, and a closing module would raise issues related to the ethics of computer use, privacy, and the social impact of computers. Other basic modules would introduce students to text processing, spreadsheet and database management, programming languages, and further information on MS-DOS or other operating systems. Advanced modules would be developed as needed. Instruction would be delivered in a variety of ways, including lecture, instructional videotapes, interactive disks, use of a projector tied to a PC, or completely individualized work combined with recitation classes. In order to facilitate the development of such a program, a structure within the institution should be established which includes an advisory committee to plan and implement the program, and a core of faculty, staff and students with computer expertise to develop the program.

ED304125

National Educational Computing Conference Proceedings (9th, Dallas, Texas, June 15-17, 1988).

Ryan, William C., Ed.

National Educational Computing Conference.

Jun 1988 450p. For the 1987 conference proceedings, see ED 291 346.

EDRS PRICE - MF01 plus postage. PC not available from EDRS.

DOCUMENT TYPE: Conference Proceedings (021); Position Paper (120); Research Report (143)

MAJOR DESCRIPTORS: *Computer Assisted Instruction; *Computer Literacy; *Computer Software; *Microcomputers; *Telecommunications

MAJOR IDENTIFIERS: *Computer Equity

The more than 200 papers and panel, project, and special session reports represented in this collection focus on innovations, trends, and research on the use of computers in a variety of educational settings. Of these, the full text is provided for 37 presentations and abstracts for 182. The topics discussed include: computer applications in mathematics, social studies, science, writing, language arts, reading, and art; teacher education; computer equity; computer-based education policy; computer-based instrumentation; computer science; software evaluation; educational technology systems/graduate education programs; computing in the USSR; use of computers with the learning disabled; study guides; database applications; desktop publishing; keyboarding; video graphics; adult and vocational education; business applications and industrial settings; LOGO; university computer education and microcomputer applications; educational computing research; university artificial intelligence programs; problem solving; staff development; computer songs; evaluating technology programs; computer learning month and computer clubs; laser disc applications; and precollege instructional delivery systems. The text is supplemented by various figures and illustrations, and the full text papers contain references. An author index is provided.

ED298884

Technology in Education: Its Prospects and Its Promises.

Senese, Donald J.

21 Apr 1983; 13p.; Paper presented at a Seminar on Technology, University of Missouri, (Kansas City, MO, April 21, 1983).
EDRS PRICE - MF01/PC01 plus postage.

DOCUMENT TYPE: Position Paper (120); Project Description (141); Conference Paper (150)
MAJOR DESCRIPTORS: *Computer Assisted Instruction; *Computer Literacy; *Educational Technology; *Federal Programs; *Microcomputers; *Teacher Education

The impact of advanced technology has increased computer usage at all levels as evidenced by the popularity of video games, increased interest on the part of students using computers to enhance learning, and business/school partnerships forming with such companies as Digital Equipment Corporation, International Business Machines, and Tandy/Radio Shack. Educators are now in a position to develop and implement programs and enter a new age of educational responsibility and decision-making. The U.S. Department of Education is interested in the role computer technology plays in education and has provided block grants via the Educational Consolidation and Improvement Act (ECIA), which have been used to purchase books and computer equipment. Teacher computer literacy is one area that needs further development, and to assist in alleviating this problem, the Office of Educational Research and Improvement (OERI) has distributed funds for programs directly related to improvement in this area. Other educational projects monitored by OERI include Project Quill, which uses microcomputers to help teachers teach writing; the development of a mathematics and reading curriculum and methodology to improve learning for elementary students, handicapped, gifted, and culturally diverse children; and the establishment of the National Diffusion Network (NDN), which provides funding for the dissemination of information about exemplary programs using technology in science and math. Individual "lighthouse projects" identified by NDN use computer-assisted instruction to improve basic skills for compensatory education, teach secondary math courses, provide occupational education, and/or utilize computers for records management and prescriptive instruction.

ED303143

Improving the Consistency in Which Teachers of Grades Fourth through Sixth Use Microcomputers To Assist Instruction.

Vitchoff, Lorraine G.

1988, 91p. Ed.D. Practicum, Nova University.
EDRS PRICE - MF01 plus postage. PC not available from EDRS.

DOCUMENT TYPE: Practicum Paper (043); Test, Questionnaire (160)
MAJOR DESCRIPTORS: *Computer Assisted Instruction; *Computer Literacy; *Inservice Teacher Education; *Microcomputers; *Teacher Attitudes

Primarily designed to increase the use of the microcomputer in the classroom as a supplement to instruction, this practicum also provided training for teachers in grades 4 through 6 and their principal in a setting which was intended to be functional and nonthreatening to the participants. The 10 participating teachers were given a pre-self-evaluation checklist, and then were trained in computer software and hardware use. In addition, a software catalog was established together with a process to requisition software. Data were collected via pre- and post-evaluation checklists and a tally of the software requisitioned by the study participants. Analyses of these data showed that the behavioral expectations of the practicum had been met, as the teachers and the principal demonstrated an understanding of how to work with a personal computer, a procedure for distributing computers and software was used by the teachers and the principal, and the teachers and the principal became aware of the software that is available in their building. Supporting materials, copies of the two checklists, and the survey results are presented in 21 appendixes, and 20 references are provided.

ED302409

Computer Resources for Schools: Notes for Teachers and Students. Educational Activities Kit.

Computer Museum, Boston, MA.

Oct 1988, 29p. Photographs and drawings may not reproduce well.
SPONSORING AGENCY: Massachusetts Council on the Arts and Humanities, Boston.
AVAILABLE FROM: Educational Coordinator, The Computer Museum, 300 Congress Street, Boston, MA 02210 ($5.00 postpaid).
EDRS PRICE - MF01/PC02 plus postage.

DOCUMENT TYPE: Non-Classroom Material (055); General Reference (130)
MAJOR DESCRIPTORS: *Computer Literacy; *Computers; *Computer Science Education; *Exhibits; *Resource Centers; *Secondary School Science
MAJOR IDENTIFIERS: *Computer Museum MA

This kit features an introduction to the Computer Museum, a history of computer technology, and notes on how a computer works including hardware and software. A total of 20 exhibits are described with brief questions for use as a preview of the exhibit or as ideas for post-visit discussions. There are 24 classroom activities about the history and work of computers, computers in daily life, and post-visit activities. A list of computer education resources in Massachusetts, Connecticut, Maine, New Hampshire, and Vermont is provided, along with a list of computer related publications that can be used as reference information. A glossary of computer terminology is also included.

Computer Simulation

ED301176

Intelligent Tutoring Systems: A Tutorial Survey.

Clancey, William J.

Stanford University, CA. Department of Computer Science.

Sep 1986, 58p. For a related report, see ED 301 175.

SPONSORING AGENCY: Office of Naval Research, Arlington, Va. Personnel and Training Research Programs Office.
EDRS PRICE - MF01/PC03 plus postage.
DOCUMENT TYPE: Review Literature (070); Position Paper (120)
MAJOR DESCRIPTORS: *Computer Assisted Instruction; *Computer Simulation; *Expert Systems; *Man Machine Systems; *Models; Problem Solving
MAJOR IDENTIFIERS: *Intelligent Tutoring Systems; *Learner Control

This survey of intelligent tutoring systems describes the components of these systems, different teaching scenarios, and the relation of these systems to a theory of instruction. It argues that the underlying pedagogical approach is to make latent knowledge manifest by using different forms of quantitative modeling: (1) simulating physical processes; (2) simulating expert problem solving, including strategies for monitoring and controlling problem solving (metacognition); (3) modeling the plans behind procedural behavior; and (4) forcing articulation of model inconsistencies through the Socratic method of instruction. Proceeding chronologically, examples of intelligent tutoring systems are described in terms of their internal knowledge representations and the evolving pedagogical theory. It also argues that, although these programs are generally only research projects, examples of what they can do make abundantly clear the long term scientific and software-engineering advantages of the new modelling methodology. The text is supplemented by 13 figures, and 31 references are provided.

ED303375

Promoting Changes in Children's Predictive Rules about Natural Phenomena: The Role of Computer-Based Modelling Strategies. Technical Report.

Frenette, Micheline

Educational Technology Center, Cambridge, MA.

Aug 1988; 200p.

SPONSORING AGENCY: Office of Educational Research and Improvement (ED), Washington, DC.; Social Sciences and Humanities Research Council of Canada, Ottawa (Ontario).
EDRS PRICE - MF01/PC08 plus postage.
DOCUMENT TYPE: Research Report (143)
MAJOR DESCRIPTORS: *Computer Simulation; *Elementary School Science; *Misconceptions; *Physical Sciences; *Science Instruction; *Scientific Concepts
MAJOR IDENTIFIERS: *Density

Trying to change the predictive rule for the sinking and floating phenomena, students have a great difficulty in understanding density and they are insensitive to empirical counter-examples designed to challenge their own rule. The purpose of this study is to examine the process whereby students from sixth and seventh grades relinquish their predictive rule in the face of counter-examples and to examine two variables that might affect their interpretation of counter-examples: the use of a computer simulation as conceptual referent, and prior awareness of an alternative concept of density. Two computer programs, "Weight and Density" and "Sink the Raft," were used as the treatment materials. Results show two main effects from the two variables. However, none of the differences in the groups remained by a posttest administered six to seven weeks after the experimental sessions. Appendices include 13 figures; 35 tables; scripts for introduction, model guided observation, and observation without the computer model; outline of treatments; a paper and pencil test; and scoring criteria.

ED304309

Teaching Scientific Methodology through Microcomputer Simulations in Genetics. Final Project Report.

Kellogg, Ted; Latson, Jon

Educational Technology Center, Cambridge, MA.

Jul 1986, 39p.

SPONSORING AGENCY: Office of Educational Research and Improvement (ED), Washington, DC.

EDRS PRICE - MF01/PC02 plus postage.

DOCUMENT TYPE: Research Report (143)

MAJOR DESCRIPTORS: *Computer Simulation; *Computer Uses in Education; *Genetics; *Scientific Methodology; *Secondary School Science; *Teaching Methods

There are two major concerns about the teaching of high school biology. One is the degree to which students memorize laws, facts, and principles, and the second involves the role of the classroom teacher. These aspects result in a discrepancy between the theory and practice of science education. The purpose of this report is to provide: (1) a recapitulation of the targets causing the difficulty, the rationale, and the research questions; (2) a chronology of 18 months of work; (3) descriptions of the instructional material, teacher training, software, and experiments performed; (4) research findings; and (5) provisional conclusions and relevant issues concerning the research. Teachers involved in the study stated that they would use the technique again. Pilot teachers admitted feeling more comfortable using the materials in teaching the second class than their initial class. Most teachers found that the higher level of thinking required and the use of the scientific method made the materials more appealing. About one in eight of the teachers preferred alternate materials or teaching strategies to this method. The appendices include suggested revisions of software, tally sheets, homework assignments, teacher pre/post questionnaires, a student post questionnaire, and student pre/post tests. A reference list is also cited.

ED308454

Computer Simulation Utilization in Graduate Behavior Therapy Training.

Lambert, Matthew E.; And Others

Apr 1989, 11p. Paper presented at the Annual Meeting of the Southwestern Psychological Association (35th, Houston, TX, April 13-15, 1989). For related document, see ED 308 453.

EDRS PRICE - MF01/PC01 plus postage.

DOCUMENT TYPE: Research Report (143); Conference Paper (150)

MAJOR DESCRIPTORS: *Behavior Modification; *Computer Simulation; *Computer Uses in Education; *Counselor Training; *Graduate Study

Practicum experiences are thought to be a time for honing clinical skills and integrating content course material with clinical practice. Often, however, the range of clinical problems encountered during practica is restricted, limiting the variety of learning experiences available to practicum group members. To provide a wider range of standardized learning experiences, four computer simulations in the areas of agoraphobia, chronic headache pain, bulimia, and cocaine abuse were developed. Simulations were designed to replicate assessment, diagnostic, and treatment processes appropriate for community mental health centers, behavioral medicine clinics, university counseling centers, and substance abuse treatment centers. The simulations were field tested in four American Psychological Association approved doctoral training programs and a social work training program. The structured evaluation form assessed the students' opinions about the simulations. Results suggest that trainees learned how to integrate various methodologies and appeared to support the use of the behavior therapy computer simulations. Questions remain about the novelty effect of the simulations, effect on counselor performance, maximizing the learning process, and integration of computer simulations into behavior therapy training programs.

ED297718

The Cognitive Effects of Simulation-Modeling Software and Systems Thinking on Learning and Achievement.

Mandinach, Ellen B.

Apr 1988, 19p. Paper presented at the American Educational Research Association (New Orleans, LA, April 5-9, 1988).
EDRS PRICE - MF01/PC01 plus postage.

DOCUMENT TYPE: Research Report (143); Conference Paper (150)
MAJOR DESCRIPTORS: *Cognitive Processes; *Computer Simulation; *Intermode Differences; *Problem Solving; *Science Curriculum; *Systems Approach
MAJOR IDENTIFIERS: *Systems Thinking Approach

This paper examines the effect of using a systems thinking approach in existing secondary school curricula to teach content-specific knowledge as well as general problem solving skills, and the effect of using STELLA (Structural Thinking Experimental Learning Laboratory with Animation), a simulation-modeling software program, as a tool by which to teach systems dynamics and content knowledge. Subjects were secondary students in three general physics, four biology, three chemistry, and one history class taught under the systems approach, and an equal number taught using traditional methods. Pretests and posttests were used to identify subjects' ability, content-specific knowledge, and knowledge of systems thinking. The results indicated that students in the more advanced courses (biology and chemistry) performed better on the systems thinking and computer-based activities. The physical science students performed well on the measurement-related problems, but did less well on the general problem solving or modelling-oriented exercises. Accordingly, these students were the least likely to generalize the systems skills beyond their course. The results raise questions about the applicability of the approach for different subjects and groups of students, and the question of why the impact of the innovation was more apparent in biology and chemistry must be considered. Seven tables supplement the text. (10 references)

ED305928

The Impact of the Systems Thinking Approach on Teaching and Learning Activities.

Mandinach, Ellen B.; And Others

Educational Testing Service, Princeton, N.J.

Dec 1988, 102p.
EDRS PRICE - MF01/PC05 plus postage.
DOCUMENT TYPE: Research Report (143)
MAJOR DESCRIPTORS: *Cognitive Processes; *Computer Simulation; *Curriculum Development; *Instructional Effectiveness; *Systems Approach
MAJOR IDENTIFIERS: *Systems Thinking and Curriculum Innovation Proj

The Systems Thinking and Curriculum Innovation (STACI) project is a multi-year research effort intended to examine the cognitive demands and consequences of learning from a systems thinking approach to instruction and from using simulation-modeling software. This study tests the potentials and effects of integrating the systems approach into science and history courses to teach content knowledge as well as general problem solving skills. Also examined is the effectiveness of STELLA, a simulation-modeling software program, as a tool by which to examine scientific and historical phenomena. The focus of the research is on the learning outcomes and modeling performance that result from introducing an instructional environment that enables students to learn from and make concrete multiple representations of dynamic phenomena. Analyses of the data are presented in 14 tables and 12 appendixes include additional data, worksheets for various tasks, and a description of ways in which the systems thinking approach was integrated into three science courses. (16 references)

ED301146

The Systems Thinking and Curriculum Innovation Project. Technical Report, Part 1.

Mandinach, Ellen B.; Thorpe, Margaret E.

Educational Technology Center, Cambridge, MA.

Sep 1987, 51p. A six-page article from the *New York Times Magazine* of April 8, 1973, reproduced in Appendix B, is barely legible. For part 2 of this technical report, see ED 301 148.
SPONSORING AGENCY: Office of Educational Research and Improvement (ED), Washington, DC.
EDRS PRICE - MF01/PC03 plus postage.
DOCUMENT TYPE: Research Report (143); Test, Questionnaire (160)
MAJOR DESCRIPTORS: *Cognitive Processes; *Computer Simulation; *Computer Software; *Secondary School Science
MAJOR IDENTIFIERS: *Systems Dynamics; *Systems Thinking and Curriculum Innovation Project

This document reports on the first year of the STACI (Systems Thinking and Curriculum Innovation) project, a two-year project which is examining the cognitive demands and consequences of using the STELLA (Structural Thinking Experimental Learning Laboratory with Animation) software to teach systems thinking, content knowledge, and problem solving. The study is also examining the extent to which this approach helps students to acquire higher-order thinking skills and generalize their new knowledge and skills to other areas. Teachers in physical science, biology, chemistry, and social studies at Brattleboro Union High School (Vermont) designed and tested ways to use STELLA; traditionally taught courses provided control. In addition to time constraints, teachers identified five difficult aspects of their task: (1) determining the appropriate sequence of knowledge that should be followed in teaching systems thinking; (2) identifying the points in the curriculum where systems thinking can best be used; (3) developing models that illustrate systems thinking but are simple enough for students to understand; (4) deciding how and when to introduce STELLA; and (5) assessing the effectiveness of systems thinking for teaching particular concepts. Teachers made progress in curriculum development, and students responded well to the new instructional materials. The teacher questionnaire, a class assignment, an analysis of time spent on curriculum topics, and a reprint of an article on the project are appended. (13 references)

ED297708

Teachers' Adoption of Multimedia Technologies for Science and Mathematics Instruction. Technical Report No. 40.

Martin, Laura M. W.

Bank Street College of Education, New York, NY. Center for Children and Technology.

Jun 1986, 28p.

EDRS PRICE - MF01 plus postage. PC not available from EDRS.

DOCUMENT TYPE: Research Report (143)

MAJOR DESCRIPTORS: *Adoption (Ideas); *Computer Simulation; *Discovery Learning; *Instructional Innovation; *Multimedia Instruction; *Teacher Role

This report describes a training project undertaken as part of the Bank Street College Mathematics, Science and Technology Teacher Training Project (MASTTE) to introduce teachers to "The Voyage of the Mimi," a 13-part television drama and multimedia package designed to supplement the regular curricula for science and mathematics in the upper-elementary and middle school grades. A major focus of the discussion is the effectiveness of the Mimi materials for classroom use, i.e., four microcomputer modules with manuals and a book version of the television show with classroom activity suggestions and additional factual information. The effects of the organizational features of the individual school systems on the adoption and diffusion of these materials are also discussed, using the notions of multi-entry levels of technology and embedded context analysis to help describe and understand the factors affecting classroom change mediated by the introduction of technology. It was found that teachers were able to tolerate a wide range of conditions for working with the Mimi package, and that the teachers' work in the classroom seemed to be as much influenced by the technology as the technological applications were shaped by the teachers. Finally, it was also found that the school systems significantly influenced and defined the project goals for the teachers, so that individual experimentations by teachers in the classrooms had different impacts depending on the context of the wider systems in which they occurred. (17 references)

Copyright

ED308856

Computer Software: Copyright and Licensing Considerations for Schools and Libraries. ERIC Digest.

Reed, Mary Hutchings

ERIC Clearinghouse on Information Resources, Syracuse, N.Y.

Jul 1989, 4p.

SPONSORING AGENCY: Office of Educational Research and Improvement (ED), Washington, DC.

AVAILABLE FROM: ERIC Clearinghouse on Information Resources, 030 Huntington Hall, Syracuse University, Syracuse, NY 13244-2340 (free while supply lasts).

EDRS PRICE - MF01/PC01 plus postage.

DOCUMENT TYPE: Non-Classroom Material (055); ERIC Product (071)

MAJOR DESCRIPTORS: *Classrooms; *Computer Software; *Copyrights; *Legal Problems; *Legal Responsibility; *Libraries;
MAJOR IDENTIFIERS: *Copyright Act 1978

This digest notes that the terms and conditions of computer software package license agreements control the use of software in schools and libraries, and examines the implications of computer software license agreements for classroom use and for library lending policies. Guidelines are provided for interpreting the Copyright Act, and insuring the fair use of software by libraries, classroom teachers, and students.

ED308855

Videotapes: Copyright and Licensing Considerations for Schools and Libraries. ERIC Digest.

Reed, Mary Hutchings

ERIC Clearinghouse on Information Resources, Syracuse, N.Y.

Jun 1989, 4p.

SPONSORING AGENCY: Office of Educational Research and Improvement ED), Washington, DC.
AVAILABLE FROM: ERIC Clearinghouse on Information Resources, 030 Huntington Hall, Syracuse University, Syracuse, NY 13244-2340 (free while supply lasts).
EDRS PRICE -MF01/PC01 plus postage.
DOCUMENT TYPE: Non-Classroom Material (055); ERIC Product (071)
MAJOR DESCRIPTORS: *Classrooms; *Copyrights; *Legal Problems; *Legal Responsibility; *Libraries; *Videotape Recordings
MAJOR IDENTIFIERS: *Copyright Act 1978

Much of the concern among librarians and educators as to the legality of library lending and classroom use of copyrighted videotapes is the result of "Home Use Only" labeling and other information supplied by the Motion Picture Association of America and some of its members. Much of this labeling and information is misleading and inapplicable to libraries and schools. This document provides guidelines for interpreting the Copyright Act for the classroom and library use of videotape recordings.

ED299678

Legal, Societal, and Ethical Issues Concerning Intellectual Rights in Computer Education.

Brunner, Regina Baron

Oct 1988, 21p. Paper presented at the Annual Meeting of the Society of Scholars and Educators (13th, Miami Shores, FL, October 7-8, 1988).

EDRS PRICE -MF01/PC01 plus postage.
DOCUMENT TYPE: Conference Paper (150); Position Paper (120)
MAJOR DESCRIPTORS: *Computer Software; *Copyrights; *Intellectual Property; *Patents; *Plagiarism

Computer software, which often takes years to produce, is currently being copied and used illegally in school settings. This violation of the law has many repercussions within the academic community. In this discussion, several court cases dealing with this situation are emphasized. It is also noted that the U.S. Office of Technology Assessment (OTA) has made an effort to differentiate between property rights and patents as this distinction applies to software. There are also recent additions to copyright laws that add computer software to those items protected. The educational community has typically not honored the copyright laws as they apply to the electronic media, though it has always strongly respected other kinds of intellectual property belonging to other persons. A recommendation is made that computer law courses must be developed for teachers so that they will be able to teach the legal requirements to their students and that academia in general must educate all those on campus as to what is appropriate, ethical, and legal behavior in respect to these issues. Twenty-seven references are appended.

Counseling and Guidance

ED301819

Counselors in Computer Land.

Blum, Larry W.

Jun 1988, 10p. Paper presented at the American School Counselor Association Elementary/Middle School Guidance Conference (Breckenridge, CO, June 22-25, 1988).

EDRS PRICE - MF01/PC01 plus postage.
DOCUMENT TYPE: Non-Classroom Material (055); Conference Paper (150)
MAJOR DESCRIPTORS: *Computer Uses in Education; *Counseling Techniques; *School Counseling

This document demonstrates some of the functions served by the four parts of the Apple-

Works program which can be used by school counselors. The four functions include word processor, data base, spread sheet, and mail merge. Each function is described, examples of the function are provided, advantages are listed, and for two examples, the support needed is listed. An example of each function used by a counselor is included. It is suggested that the computer allows a counselor to do some tasks more easily and more quickly.

ED304619

Counselor Computer Competence: Future Agenda for Counselor Educators.

Dickel, C. Timothy

8 Oct 1988, 23p. Paper presented at the Annual Conference of the Association for Counselor Education and Supervision (1st, St. Louis, MO, October, 1988).

EDRS PRICE - MF01/PC01 plus postage.

DOCUMENT TYPE: Position Paper (120); Conference Paper (150)

MAJOR DESCRIPTORS: *Competence; *Computer Literacy; *Computer Oriented Programs; *Counselor Educators; *Counselor Training

This paper asserts that the computer has become an integral part of communication within the world culture and that it has tremendous utility for the counseling profession. Counselor educators are encouraged to incorporate computer competence into their curriculum. This report is divided into four parts. First, there is a brief discussion of the concept of computer competence which emphasizes that it is really computer fluency that counselor educators should be after as an attribute for their graduates. Next, there is an overview of five common computer applications (word processing, electronic spreadsheets, database management, desktop publishing, and electronic telecommunications/data communications). The Council for the Accreditation of Counseling and Related Educational Programs (CACREP) curricular areas are presented with suggestions for computer assignments within each of these areas: (1) human growth and development; (2) social and cultural foundations; (3) the helping relationship; (4) groups; (5) lifestyle and career development; (6) appraisal of the individual; (7) research and evaluation; and (8) professional orientation. Finally, a number of special topics are discussed that can have current and future benefits from the infusion of computer competence into the counselor education process. These include hypertext, statistics packages, networking, artificial intelligence, CD-ROM (compact disk read only memory), and computer-assisted instruction.

ED307527

Counseling Software Guide: A Resource for the Guidance and Human Development Professions.

Walz, Garry R.; Bleuer, Jeanne C.

American Association for Counseling and Development, Alexandria, VA.

1989, 482p.

REPORT NO.: ISBN-0-55620-058-7

AVAILABLE FROM: ERIC/CAPS, University of Michigan, School of Education, Room 2108, Ann Arbor, MI 48109; or American Association for Counseling and Development, 5999 Stevenson Avenue, Alexandria, VA 22304 ($47.00 for AACD members; $52.00 for non-members).

EDRS PRICE - MF02 plus postage. PC not available from EDRS.

DOCUMENT TYPE: Classroom Material (050); Book-Product Review (072)

MAJOR DESCRIPTORS: *Academic Advising; *Administration; *Career Counseling; *Computer Assisted Testing; *Computer Software; *Counseling

MAJOR IDENTIFIERS: *Computer Assisted Counseling

This document is a guide to counseling software. It presents overviews on the state of development of counseling and human services software in five major topic areas including personal counseling, career counseling, academic advising, testing and administration. It provides factual and up-to-date descriptions of over 500 counseling-relevant software programs as well as 93 software reviews. It illustrates how far the field has come in the use of computers in counseling and what paths and options the future holds. Strategies on how to use the guide are presented which describe how to find out about the use of computers in counseling, what to look for in software, an overview of trends and developments in the availability and use of software, an overview of the range of software programs available, and information on specific software programs. The first section discusses trends and developments in counseling software. The second section provides software descriptions in the areas of personal counseling, career counseling, academic advising, testing, and administration. The third section provides software reviews in the same areas.

Interactive Video

ED297164

Interactive Laser Video Disc. Health Occupations Education.

Beam, Glennie; Wright, Patsy

Lincoln County School of Technology, Lincolnton, NC.

1988, 31p.

EDRS PRICE - MF01/PC02 plus postage.

DOCUMENT TYPE: Directory (132)

MAJOR DESCRIPTORS: *Allied Health Occupations Education; *Courseware; *Instructional Material Evaluation; *Interactive Video; *Media Selection; *Videodisks

This module is intended to assist secondary school instructors in selecting and evaluating courseware related to the health occupations education curriculum. The main section contains descriptions of 20 pieces of courseware. Each entry includes the following information: title, description, audience, vendor, price, and recommendation. A glossary and bibliography are also provided. Appendixes contain a product/price list of available videodisk hardware, schematics of three different levels of interactivity, and a courseware evaluation sheet.

ED297707

Design Options for Interactive Videodisc: A Review and Analysis. Technical Report No. 39.

Char, Cynthia A.; Newman, Denis

Bank Street College of Education, New York, NY. Center for Children and Technology.

May 1986, 21p. The work of the Interactive Video Project was supported by CBS, Inc., and Sony Corporation of America.

AVAILABLE FROM: Center for Children and Technology, Bank Street College of Education, 610 W. 112th St., New York, NY 10025 ($3.00).

EDRS PRICE - MF01 plus postage. PC not available from EDRS.

DOCUMENT TYPE: Evaluative Report (142); Book-Product Review (072)

MAJOR DESCRIPTORS: *Design Requirements; *Instructional Design; *Interactive Video; *Material Development; *Videodisks

This paper describes the highlights of a review of both commercially available videodiscs and research prototypes that was undertaken for the Interactive Videodisc Project, and sets out design principles suggested by the best examples, which take advantage of the unique characteristics of laser videodisc technology. Design options on three levels of interactivity are considered, with emphasis on Level 1 (ordinary videodisc player, with a handset for play, still/step, scan, fast forward, and reverse), and Level 3 (player attached to an independent computer, with the computer controlling the player). Level 1 design options discussed include use of variable motion, forward and reverse, and use of audio tracks; the Level 3 design options discussed include simulations and databases. Finally, certain exemplary discs are described which have made the most of the medium by intermixing the various symbolic forms, allowing each to play the role for which it is best suited. A list of the 30 videodiscs that were reviewed is provided. (3 references)

ED297709

Getting the Picture: Four Classroom Case Studies of Videodisc Use in Schools. Technical Report No. 41.

Char, Cynthia A.; Tally, William

Bank Street College of Education, New York, NY. Center for Children and Technology.

Oct 1986, 39p.

AVAILABLE FROM: Center for Children and Technology, Bank Street College of Education, 610 West 112th St., New York, NY 10025 ($4.00).

EDRS PRICE - MF01 plus postage. PC not available from EDRS.

DOCUMENT TYPE: Research Report (143)

MAJOR DESCRIPTORS: *Art Activities; *Classroom Techniques; *Instructional Design; *Science Instruction; *Videodisks

These four case studies examine the introduction of interactive videodisc technology into three classroom settings by two art and two science teachers at the elementary school level. Five models of videodisc use were employed: (1) teacher presentation or teacher-led class discussion; (2) activity stimulus; (3) programmed disc-based environments (i.e., simulations, games, or other problem-solving contexts); (4) visual databases; and (5) student presentations. It was found that videodisc use was important in both large group and small group instruction, that elementary school classrooms make extensive use of visual information resources, and that videodiscs can be used to meet this information need. Both students and teachers found the videodiscs—which permitted student and teacher control over the pacing, access, and replay of information—to be a stimulating alternative to regular classroom instruction. However, it was also found that, contrary to assumptions held in the videodisc industry, teachers are neither simply consumers of existing videodiscs nor are they designers and programmers who possess the knowledge, time, and energy to redesign and retrofit videodiscs. It is suggested that teachers could, nonetheless, make valuable contributions to the videodisc design process. Four explanatory footnotes are provided. (27 references)

ED308814

The Singer as Iconoclast: Six Arguments about the Use of Video Disk for Teaching.

Clark, Richard E.

Feb 1989, 12p. In: *Proceedings of Selected Research Papers presented at the Annual Meeting of the Association for Educational Communications and Technology (Dallas, TX, February 1-5, 1989).* For the complete proceedings, see ED 308 805. For related papers, see ED 308 813-817.
EDRS PRICE - MF01/PC01 plus postage.
DOCUMENT TYPE: Position Paper (120); Conference Paper (150)
MAJOR DESCRIPTORS: *Creative Thinking; *Instructional Effectiveness; *Interactive Video; *Media Research; *Videodisks

This paper poses and generates the answers to six questions about the use of newer media in education and the areas of disagreement that seem to recur as new media become available for teaching. Cast in the context of videodisks, those questions ask whether: (1) videodisk technology is more effective than traditional media in promoting learning; (2) the visual nature of videodisk promotes more creative thinking by students; (3) media like videodisk, which present information in a more realistic way, enhance student learning; (4) students are more motivated to learn from newer media like videodisk than from more traditional media; (5) media like videodisk increase the freedom of instructional choice by students; and (6) videodisks are less expensive than teachers for some types of instruction. A brief discussion of the possibilities of using educational media to solve some of the problems of developing nations concludes the paper.

ED302193

Stand By for Fun: Experience and Interaction.

Crockford, Douglas

Jun 1986, 9p. Paper presented at an Invitational Conference on Multimedia in Education (Cupertino, CA, June 19-20, 1986). In: *Learning Tomorrow: Journal of the Apple Education Advisory Council,* n3 p293-301 Spr 1987. For the complete journal, see ED 302 179.
EDRS PRICE - MF01/PC01 plus postage.
DOCUMENT TYPE: Journal Article (080); Conference Paper (150)
MAJOR DESCRIPTORS: *Design Requirements; *Interactive Video; *Man Machine Systems; *Marketing; *Technological Advancement; *Video Games

This paper explores interactivity, and considers what should be done to create a mass market for interactive media. It is suggested that one way to do so is to examine the video game phenomenon, and a model of interactivity is proposed. The model, a "home interactive theater," would involve interaction in the telling of a story, with the interactor given some room for self-expression in the context of interesting events, although no control over changing the end of the story. It is suggested that, in this context, interaction should have more to do with taking part than with making decisions.

ED308813

Interactive Video Symposium: The Singer or the Song—An Extension of Clark's Media Research Discussion.

Grabowski, Barbara L.

Feb 1989, 6p. In: *Proceedings of Selected Research Papers presented at the Annual Meeting of the Association for Educational Communications and Technology (Dallas, TX, February 1-5, 1989).* For the complete proceedings, see ED 308 805. For related papers, see ED 308 814-818.
EDRS PRICE - MF01/PC01 plus postage.
DOCUMENT TYPE: Review Literature (070); Position Paper (120); Conference Paper (150)
MAJOR DESCRIPTORS: *Interactive Video; *Media Research

An introduction to a symposium on interactive video, this brief paper announces that the symposium will continue the debate on whether media are simply delivery vehicles for instruction by considering the inherent properties of interactive video and its impact on achievement, including the way in which the properties of this medium both dictate the form of the transmitted message and influence the way a student processes information. An analogy is drawn in which the medium is equated with the singer and the message with the song. It is also announced that this discussion will be provided from several points of view by the five symposium speakers: (1) Richard E. Clark, University of Southern California; (2) Michael A. Yacci, Rochester Institute of Technology; (3) Claudia Pask-McCartney, Syracuse University; (4) Elisa J. Slee, Syracuse University; and (5) Barbara L. Grabowski, Syracuse University. (13 references)

ED308815

Reflections on Why Media Comparison Studies Continue To Be Conducted—with Suggested Alternatives.

Grabowski, Barbara L.

Feb 1989, 9p. In: *Proceedings of Selected Research Papers presented at the Annual Meeting of the Association for Educational Communications and Technology (Dallas, TX, February 1-5, 1989).* For the complete proceedings, see ED 308 805. For related papers, see ED 803 813-818.

EDRS PRICE - MF01/PC01 plus postage.

DOCUMENT TYPE: Position Paper (120); Conference Paper (150)

MAJOR DESCRIPTORS: *Computer Assisted Instruction; *Interactive Video; *Intermode Differences; *Media Research; *Student Motivation

This paper discusses media comparison studies and reasons that research of this nature is pursued, especially in the area of computer-based interactive video (CBIV). Three scenarios are presented to demonstrate instances in which the knowledge of the relative effectiveness of CBIV is important and useful: (1) the case of the administrator who requires data to help make an informed decision about major budget expenditure, i.e., macro media acquisition decisions; (2) the well designed research results that are misrepresented, very often because of ignorance on the part of the researchers; and (3) student studies that are loosely conceptualized, with a resulting proliferation of trivialized media comparison studies. It is postulated that for the main question posed in each of these scenarios, i.e., whether CBIV is effective, there are two underlying questions integral to the scenarios, whether interactive video is effective, and whether CBIV is cost-effective. It is suggested that additional studies should be conducted to compare media from an economic standpoint, and to emphasize to administrators that they actually need data on the cost of CBIV in order to determine its effectiveness. In addition, factors that enable or prohibit the medium from reaching its potential for delivering effective instruction are identified and divided into two categories, non-media-related and media-related. Finally, three important interrelated areas of study described as the new points of emphasis in considering media effectiveness are examined: instructional and motivational strategies research; message design research; and intra-medium studies. (7 references)

ED302196

Multimedia in Education: Summary Chapter.

Hooper, Kristina

Jun 1986, 18p. Paper presented at an Invitational Conference on Multimedia in Education (Cupertino, CA, June 19-20, 1986). In: *Learning Tomorrow: Journal of the Apple Education Advisory Council, n*3 p357-374 Spr 1987. For the complete journal, see ED 302 179.

EDRS PRICE - MF01/PC01 plus postage.

DOCUMENT TYPE: Journal Article (080); Conference Paper (150)

MAJOR DESCRIPTORS: *Computer Software; *Computer System Design; *Design Requirements; *Instructional Development; *Interactive Video; *Multimedia Instruction

This summary of issues addressed at the conference identifies 10 important themes: (1) the nature of interactivity, and whether linear presentations are obsolete; (2) what can be done with all the imagery made possible with videodisks and the sounds enabled by compact disks, and whether any of this is really new; (3) whether emotional presentations are appropriate to education, or whether technology efforts should be used primarily to present "factual data" in educational settings; (4) whether the central task in the design of educational presentations is to link large amounts of information or to tell stories, and what balance is required between directed searching and browsing paradigms; (5) what will be required to make presentations now quite familiar in research laboratories available to the general community, and why it is taking so long; (6) what we know from cognitive theory that we can use in designing with new multimedia interface systems; (7) how multimedia educational "stations" will fit into schools if they do fit in; (8) how a language to describe the "experience" of a technology-based presentation can best be developed; (9) whether there will or should be a standard interface to multimedia experiences, and what the appropriate metaphor for this interface would be; and (10) whether the results will be significant educationally, entertaining, or both, when you combine the traditions of movie-making, graphic design, computer education, encyclopedia development, text publication, public television, computer workstations design, classroom teaching, library organization, entertainment, and psychology.

ED308828

Perceived Attitudinal Effects of Various Types of Learner Control in an Interactive Video Lesson.

Milheim, William D.

Feb 1989, 23p. In: *Proceedings of Selected Research Papers presented at the Annual Meeting of the Association for Educational Communications and Technology (Dallas, TX, February 1-5, 1989).* For the complete proceedings, see ED 308 805.

EDRS PRICE - MF01/PC01 plus postage.

DOCUMENT TYPE: Research Report (143); Conference Paper (150); Test, Questionnaire (160)

MAJOR DESCRIPTORS: *Computer Assisted Instruction; *Interactive Video; *Intermode Differences; *Pacing; *Sequential Learning; *Student Attitudes

MAJOR IDENTIFIERS: *Learner Control

Student attitudes were investigated in an attempt to determine systematic attitudinal differences among various types of instructional control. Ninety-nine undergraduate students from a basic educational media course volunteered for this study. Six interactive video lessons—covering basic technical aspects of 35 millimeter photography—were designed; they combined visuals and sound from the videodisc and text from the computer. The design of these materials allowed for either program or learner control of pacing, as well as program or learner control of sequence, thereby establishing four treatment groups: learner control of pacing and sequence; learner control of pacing/program control of sequence; program control of pacing/learner control of sequence; and program control of pacing and sequence. The attitudinal instrument—composed of nine Likert-scale items and an open-ended question asking for additional comments about the instructional program—was given to all subjects. In general, attitudes toward learner control revealed in this study support earlier research and demonstrate positive effects for both types of learner control and no change as compared to program control. Student attitudes toward the use of interactive video systems were consistently high across all groups, with students giving high ratings to the use of videodisc and generally to the text from the computer. This support was reflected both in the Likert items and the open-ended question. However, there were no statistical differences between the different types of instructional control for the interactive video system. (19 references)

ED308852

Interactive Video and Cognitive Structures: A Technique for Enhancing the Effectiveness of Interactive Simulations and Games.

Romiszowski, Alexander J.; Grabowski, Barbara L.

Feb 1989, 29p. Paper presented at the Annual Meeting of the Association for Educational Communications and Technology (Dallas, TX, February 1-5, 1989).

EDRS PRICE - MF01/PC02 plus postage.

DOCUMENT TYPE: Conference Paper (150); Evaluative Report (142)

MAJOR DESCRIPTORS: *Computer Assisted Instruction; *Computer Simulation; *Instructional Design; *Interactive Video; *Problem Solving; *Programed Tutoring

MAJOR IDENTIFIERS: *Structural Communication

In the late 1960s and early 1970s a considerable amount of research was conducted on methods for authoring and structuring instructional materials by researchers who did not, at that time, have access to the existing delivery systems necessary to fully implement their ideas. One of these methodologies is Structural Communications, developed by Anthony Hodgson and his associates in the United Kingdom. This authoring methodology was implemented in a paper-based format with great success, but it seems that its potential for computer-based instruction, its true original purpose, has never been fully exploited. This paper outlines the characteristics of this approach and describes the authors' work at Syracuse University over the past two years which applies the principles to interactive video simulations. (33 references)

ED302194

The Microsoft Multimedia Encyclopedia.

Ropiequet, Suzanne

Jun 1986, 18p. Paper presented at an Invitational Conference on Multimedia in Education (Cupertino, CA, June 19-20, 1986). In: *Learning Tomorrow: Journal of the Apple Education Advisory Council,* n3 p303-320 Spr 1987. For the complete journal, see ED 302 197.

EDRS PRICE - MF01/PC01 plus postage.

DOCUMENT TYPE: Journal Article (080); Conference Paper (150)

MAJOR DESCRIPTORS: *Computer System Design; *Encyclopedias; *Information Retrieval; *Interactive Video; *Videodisks
MAJOR IDENTIFIERS: *Hypermedia; *Multimedia Materials

A multimedia encyclopedia (MME) demonstration disk has been developed by the Microsoft Corporation, which contains five-page articles on 12 subjects. Each article contains text, images, audio, and in some cases, animation and full motion digital images. Each MME article is constructed as a network of linked text, image, and sound files. With mouse or keyboard control, the user can browse through an article, select audio descriptions or sound effects, images, cross-references to other articles, or supplementary text information, and a mouse click activates the playback and display routines. The MME provides three data-accessing methods, each designed to accommodate different learning styles: an outline search method called "PathKey"; a keyword search method call "WordKey"; and an alphabetically ordered index called the "Browser." Any data object may be associated with highlighted or colored area on the screen. These areas are called "buttons" or "hot keys," and are activated when selected with the mouse. By providing links to multiple levels of information using different media, this hypermedia system is able to accommodate a much broader audience than a static two-dimensional information system. Examples of screens from the MME system are presented in 17 figures.

ED308838

Teaching Science Using Interactive Videodisc: Results of the Pilot Year Evaluation of the Texas Learning Technology Group Project.

Savenye, Wilhelmina C.; Strand, Elizabeth

Feb 1989, 20p. In: *Proceedings of Selected Research Papers presented at the Annual Meeting of the Association for Educational Communications and Technology (Dallas, TX, February 1-5, 1989)*. For the complete proceedings, see ED 308 805.
EDRS PRICE - MF01/PC01 plus postage.
DOCUMENT TYPE: Research Report (143); Conference Paper (150)
MAJOR DESCRIPTORS: *Computer Assisted Instruction; *Curriculum Development; *Interactive Video; *Physical Sciences; *Pilot Projects

A computer-based interactive video was developed in 1985 for the Texas Learning Technology Group (TLTG) Project, a partnership formed by the Texas Association of School Boards, the National Science Center Foundation, and 12 Texas school districts in response to the national and state crisis in science, math, and technology education. A pilot test of a semester-long high school chemistry curriculum delivered by TLTG was conducted during the 1987-1988 school year, in part to investigate teacher attitudes and teacher implementation behavior. Twenty-six teachers participated in the interactive videodisc (IVD) study, which also made use of records of 2,297 students and achievement data collected from a sample of the students (N = 338). The major findings revealed that IVD students generally achieved higher scores than non-IVD students; IVD students indicated a greater degree of intention to enroll in an elective science course than control students; most teachers liked using the curriculum and found it easier to teach than the traditional curricula; all teachers used supplemental materials in conjunction with the curriculum; and all teachers felt that their students had learned more using the TLTG curriculum than they had learned in previous years. Both videotaped classroom observations of the TLTG curriculum and staff visits to all of the school districts using the curriculum were made during the pilot year. A new evaluation plan has been formulated for the field test year of the TLTG evaluation (1988-1989), and data are being collected on the actual on-site implementation of the TLTG field test curriculum. (4 references)

ED305038

Using Interactive Laserdiscs: Inexpensive Teaching Tools for the Classroom.

Schwartz, Ed

1987, 13p. Paper presented at the National School Boards Association Meeting (Dallas, TX, November 5, 1988).
EDRS PRICE - MF01/PC01 plus postage.
DOCUMENT TYPE: Teaching Guide (052); Project Description (141); Conference Paper (150)
MAJOR DESCRIPTORS: *Indexes; *Interactive Video; *Music Education; *Teaching Methods; *Videodisks

Educational videodiscs can provide effective instruction, but the cost of hardware needed to perform the desired system functions has been a limiting factor in videodisc use in the classroom. However, many videodisc applications can be adequately and effectively approached with much less than the ideal system, and very little attention has been given to maintaining an effective, inexpensive system. A basic level 1 system—consisting of a videodisc player with a handset for interaction and a standard television monitor—can be extremely effective when coupled with a well conceived lesson. For example, a videodisc of the opera "La Boheme" is available that can be used with an index developed by the University of Delaware to introduce students to the musical concepts in the score. While this interaction can be accomplished without computer control, it can also be easily upgraded to a level 3 system with computer control. The University of Maine has also developed study guides to accompany the compact disc of an orchestral work, Tchaikovsky's "Romeo and Juliet." An index provides a list of significant locations that can be randomly accessed by the videodisc player as well as identifying main themes and many other musical events. Again, the index information can be used to create a lesson without the use of a computer, or can be easily upgraded to use a level 3 system with a computer. Two equipment references and eight journal articles are listed.

ED308818

A Review of the Research on Interactive Video.

Slee, Elisa J.

Feb 1989, 22p. In: *Proceedings of Selected Research Papers presented at the Annual Meeting of the Association for Educational Communications and Technology (Dallas, TX, February 1-5, 1989).* For the complete proceedings, see ED 308 805. For related papers, see ED 308 813-817.

EDRS PRICE - MF01/PC01 plus postage.

DOCUMENT TYPE: Review Literature (070); Conference Paper (150)

MAJOR DESCRIPTORS: *Affective Measures; *Cognitive Style; *Instructional Effectiveness; *Interactive Video; *Media Research

This review of the literature on interactive video examines research and evaluation reports in the context of the continuing debate over the effectiveness of media debate and Richard E. Clark's argument that media do not have a substantial impact on learning. The literature is examined from four perspectives: (1) behavioral issues (e.g., whether videodisc based programs have helped teachers achieve high levels of student mastery for large and diverse classes); (2) cognitive issues (whether media can activate mental skills); (3) affective issues (whether a learner has a particular preference for a type of medium and how much effort he/she has to invest in order to learn a particular task); and (4) economics and cost-effectiveness (what kind of cost-effectiveness studies can be conducted to examine the role of interactive video in increasing learning efficiency). It is noted that Clark is viewed as being accurate in suggesting that the wrong questions are being addressed in terms of the effectiveness of interactive video. Concluding remarks point out that the literature indicates that new variables are being researched in media comparison studies that might result in more generalizable findings; that the promise for future media research lies in using interactive video as a research tool; and that the need exists to conduct evaluation studies on the medium itself in order to optimize its features and capabilities. Three tables are appended which summarize some of the principal research that has been done on interactive video to date. (39 references)

Management/Administration

ED302175

Long Range Technology Planning.

Ambron, Sueann, Ed.

Apple Computer, Inc., Cupertino, CA.

Win 1986, 172p. In: *Learning Tomorrow: Journal of the Apple Education Advisory Council*, n2 Win 1986. For individual articles in this theme issue, see ED 259 707, ED 284 538, and ED 302 176-178.

EDRS PRICE - MF01/PC07 plus postage.

DOCUMENT TYPE: Serial (022)

MAJOR DESCRIPTORS: *Computer Software; *Curriculum Development; *Long Range Planning; *Microcomputers; *Staff Development

MAJOR IDENTIFIERS: *Software Development; *Software Selection

This summary of a meeting of the Apple Education Advisory Council on long range technology plans at the state, county, district, and school levels, includes highlights from group discussions on future planning, staff development, and curriculum. Three long range technology plans at the state level are provided: Long Range Educational Technology Plan for California Schools; Learning Technologies and Telecommunications in New York State; and The Use of a Computer To Help Teach the School Curriculum (Minnesota). A county level plan from the Sonoma County Office of Education and a school level plan from the Cincinnati (Ohio) Country Day School are also provided, as well as district level plans from the Palo Alto (California) Unified School District, the Los Angeles (California) Unified School District, and the Keene (New Hampshire) School District. The texts are supplemented by various charts, diagrams, and illustrations, and some references and other resources are listed by individual plans.

ED305912

How Are Successful Elementary Schools Allocating Their Instructional Computing Time?

Beaver, John F.

Feb 1989, 9p. Paper presented at the Annual Meeting of the Eastern Educational Research Association (Savannah, GA, February 22-25, 1989).

EDRS PRICE - MF01/PC01 plus postage.

DOCUMENT TYPE: Position Paper (120); Research Report (143); Conference Paper (150)

MAJOR DESCRIPTORS: *Computer Assisted Instruction; *Computer Oriented Programs; *Elementary Schools; *Programing; *Time Management

A national survey was conducted during the 1987-88 academic year to investigate the characteristics of selected high quality elementary schools known for their support of instructional technology. Of the 73 schools contacted, 70% responded to the survey. The findings showed that available computer time was most often divided among three major uses: computer applications (29%), computer assisted learning (55%), and computer programming (14%). Some of the total programming time was typically allotted to both Logo and BASIC, with about 64% more time spent on Logo. The three specific activities that occurred most frequently—drill and practice (24%), word processing (18%), and tutorials (12%)—accounted for more than one-half (54%) of the total computer access time. Although school leaders must allocate available computer time to agree with the general philosophy and goals of their particular school and the more explicit objectives of their specific instructional computing programs, they need to consider greater variety in computer activities, including a shift in emphasis to computer applications. However, such a shift would require increased training and computer hardware, and thus certainly greater expenditures. (2 references)

ED305918

Profiles in Excellence: An Examination of High Quality Elementary School Instructional Computing Programs.

Beaver, John F.

[1989], 9p. Paper presented at the Annual Conference of the Eastern Educational Research Association (Savannah, GA, February 21-24, 1989).

EDRS PRICE - MF01/PC01 plus postage.

DOCUMENT TYPE: Project Description (141); Conference Paper (150)

MAJOR DESCRIPTORS: *Computer Assisted Instruction; *Elementary Schools; *Program Development; *Resource Allocation

A study was conducted during the fall of 1987 which examined aspects of successful elementary school instructional computing programs. The results show school leaders the approaches adopted by decision makers in a national sample of elementary schools identified for the excellence of their instructional computing programs. Significant findings include budgetary issues, computer allocation time, planning considerations and computer usage. The most striking budgetary findings suggest a major decline in instructional computing expenditures compared with previous years. Expenditures are dominated by hardware purchases; in the 1987 budgets, 73% of the funds were spent on hardware, whereas only 15% were devoted to software purchase. In addition, the study revealed a noteworthy shift in the way that leaders intend to allocate their available computer time in the future. Cooperative planning was undertaken by committees comprised mainly of principals and classroom teachers. The most critical contributors to program development were mainly equipment-oriented; the most significant barriers to program development were people-oriented. Apple IIe's were overwhelmingly the computers of choice and word processing was rated the most valuable instructional computing use. (3 references)

ED301918

The Influence of Values on Principals' Problem-Solving Processes: An Empirical Study.

Begley, Paul T.

Apr 1988, 21p. Paper presented at the Annual Meeting of the American Educational Research Association (New Orleans, LA, April 5-9, 1988).

EDRS PRICE - MF01/PC01 plus postage.

DOCUMENT TYPE: Research Report (143); Conference Paper (150)

MAJOR DESCRIPTORS: *Administrator Attitudes; *Behavior Patterns; *Computer Uses in Education; *Principals; *Problem Solving

This study explores the influence of personal values in problem-solving processes used by elementary school principals responding to the introduction of computers to their schools. Hodgkinson's values hierarchy was used to define actions that more rational frameworks might dismiss or explain inadequately. The hierarchy included three types of values: transrational values grounded in ethics or principles, rational values based on an individual's assessment of consequences or consensus, and subrational values related to personal preferences. Study data were collected through interviews with a school system's 15 principals and used to produce individual case studies and a cross-case analysis. Results showed that principals' personal values significantly influenced their actions, particularly when the initial decision to adopt computers was made. Most principals based their responses on values of consensus and consequences. Principals whose perceptions initially favored either ethics or personal preference seemed to shift gradually over time toward consequences. Data relating to the influence of personal values provided additional insights extending beyond those furnished by planned change, school improvement, or principal effectiveness research perspectives. Because generalization from these study data is difficult, further research is necessary to determine if the value orientations examined here are characteristic responses to the adoption of computers only or typical for most educational innovations. Included are 12 references.

ED305915

Improving the Use of Technology in Schools: What We Are Learning. Research Bulletin #1.

Center for the Study of Educational Technology, St. Paul, MN.

Nov 1988, 33p.

SPONSORING AGENCY: Minnesota Educational Computing Consortium, St. Paul.; Minnesota Univ., Minneapolis. College of Education.

AVAILABLE FROM: Minnesota Educational Computing Consortium/University of Minnesota Center for the Study of Educational Technology, 3490 Lexington Avenue North, St. Paul, MN 55126 (two copies may be obtained free of charge, additional copies are $7.00 each).

EDRS PRICE - MF01/PC02 plus postage.

DOCUMENT TYPE: Research Report (143)

MAJOR DESCRIPTORS: *Computer Assisted Instruction; *Computer Graphics; *Courseware; *Databases

MAJOR IDENTIFIERS: *Learner Control

This bulletin summarizes six studies on the integration of technology into education. Information provided for each study includes the background or the problem statement, study goals, methodology, conclusions, and recommendations. The first three studies focus on the impact of technology on education: "The Effect of Computer Use and Student Work Style on Database Analysis Activities in the Social Studies" (Don Rawitsch); "Pairing and Task Persistence Level in a Learner-Controlled Computer-Based Concept Lesson" (Carol Carrier, Michael Williams, Anju Relan, and Jason Earle); and "Using Computer Database Programs To Facilitate Higher-Order Thinking Skills" (Don Rawitsch). The other three studies focus on the design and use of technology-based products: "Open Desktop Environment: The Features and Benefits of a New Interface for Computer-Based Instruction" (Anju Relan); "Graphic Fidelity, Gender, and Performance in Computer-Based Simulations" (Gregory Sales and Michael Johnston); and "Pursuing 'Quality' in Instructional Software: A Progress Report" (Michael D. Williams). Each report provides bibliographic references, and citations for eight additional studies are listed. Manuscript specifications for submissions to this research bulletin are also provided.

ED301931

The RCM: A Resource Management and Program Budgeting Approach for State and Local Educational Agencies.

Chambers, Jay G.; Parrish, Thomas B.

Stanford Univ., CA. Institute for Research on Educational Finance and Governance.

[1984], 271p.

SPONSORING AGENCY: National Institute of Education (ED), Washington, DC.

EDRS PRICE - MF01/PC11 plus postage.

DOCUMENT TYPE: Project Description (141); Non-Classroom Material (055)

MAJOR DESCRIPTORS: *Computer Simulation; *Decision Making; *Educational Resources; *Management Information Systems; *Models; *Systems Analysis

The Resource Cost Model (RCM) is a resource management system that combines the technical advantages of sophisticated computer simulation software with the practical benefits of group decision making to provide detailed information about educational program costs. The first section of this document introduces the conceptual framework underlying the development and use of the RCM and includes illustrations of the kinds of information produced by the program: summary cost data; total and average costs of educational services; resource costs and quantities by program, service, and object; and budget reports. The second section presents a classification scheme for describing programs and services and illustrates how this classification scheme can be used to develop descriptions, labels, names, and codes for programs and services and for payroll schedules and cost analysis. The final section provides instructions on how to install and run the RCM computer simulation. Appended are file formats, samples, and worksheets.

ED307704

Computer-Aided Facilities Management Systems (CAFM).

Cyros, Kreon L.

1989, 10p.

EDRS PRICE - MF01/PC01 plus postage.

DOCUMENT TYPE: Evaluative Report (142)

MAJOR DESCRIPTORS: *Computer Oriented Programs; *Computer Software; *Computer System Design; *Management Information Systems; *Management Systems; *Word Processing

MAJOR IDENTIFIERS:*Computer Aided Facilities Management

Computer-aided facilities management (CAFM) refers to a collection of software used with increasing frequency by facilities managers. The six major CAFM components are discussed with respect to their usefulness and popularity in facilities management applications: (1) computer-aided design; (2) computer-aided engineering; (3) decision support systems; (4) management information systems; (5) project management systems; and (6) word processing. The facilities planning process is briefly reviewed, followed by a discussion of the relative benefits of the six major components.

ED305251

An Evaluation of a Teacher-Enhancement Project on Educational Computing.

Ellis, James D.

Biological Sciences Curriculum Study, Colorado Springs.

Apr 1989, 51p. Interim report to the National Science Foundation for Year Two of ENLIST Micros II.

SPONSORING AGENCY: National Science Foundation, Washington, D.C.

EDRS PRICE - MF01/PC03 plus postage.

DOCUMENT TYPE: Project Description (141); Research Report (143); Test, Questionnaire (160)

MAJOR DESCRIPTORS: *Computer Managed Instruction; *Computer Uses in Education; *Inservice Teacher Education; *Secondary School Science; *Teaching Methods

MAJOR IDENTIFIERS: *Concerns Based Adoption Model

The Biological Science Curriculum Study with support from others conducted a three-year project (ENLIST Micros II) to develop and test a model for implementing educational computing in science courses. Descriptive data on background characteristics, prior experience with microcomputers, and educational level of the leaders and new participants was gathered. Leaders and new participants evaluated the workshops and seminars using questionnaires. The project used the Concerns Based Adoption Model (CBAM) developed by the Research and Development Center for Teacher Education at the University of Texas as the approach to evaluating implementation. Leaders and new participants completed the Stages of Concern Questionnaire and the Microcomputer Use in Science Teaching checklist as pretests and posttests to indicate their concerns about and degree of implementing microcomputers in science teaching. By the end of the second year 100 percent of the leaders and 84.6 percent of the new participants were using microcomputers to manage instruction and 92.3 percent of the leaders and 66.7 percent of the new participants indicated that their students were using microcomputers to learn science. The profiles of the leaders and new participants on the Stages of Concern Questionnaire changed from one typical of non-users toward one appropriate for users of an innovation.

ED304854

Ends-To-Means Model.

Fitterman, Lawrence Jeffrey

1988, 28p.

EDRS PRICE - MF01/PC02 plus postage.

DOCUMENT TYPE: Non-Classroom Material (055)

MAJOR DESCRIPTORS: *Computer Software; *Database Design; *Disabilities; *Management

Information Systems; *Recordkeeping; *Student Records

This paper demonstrates the importance of effective planning when using database application programs in exceptional education programs, to more efficiently track students' performance, keep vital information, and create desired reports. The described approach, called the ends-to-means model, calls for developing the database by designing the formats of the desired reports first. Then, all of the categories of information from each type of report are combined into a list; the most logical sequence of information for data entry is determined; a data entry form is designed; and sample reports are created to test the process. A prototype of a database design is provided, including a rationale, examples of database applications, and time considerations in creating the databse. The bulk of the paper is made up of visuals and transparencies used in presenting the paper to large groups.

ED301155

Computer Pilot Program, 1986-87. OEA Evaluation Report.

Guerrero, Frank; Swan, Karen

New York City Board of Education, Brooklyn. Office of Educational Assessment.

Jan 1988, 62p.

EDRS PRICE - MF01/PC03 plus postage.

DOCUMENT TYPE: Evaluative Report (142)

MAJOR DESCRIPTORS: *Administrator Attitudes; *Computer Assisted Instruction; *High Risk Students; *Student Attitudes; *Teacher Attitudes

MAJOR IDENTIFIERS: *Vendors

The Computer Pilot Program that was implemented in 19 New York City schools in 1986-87 was designed to investigate the efficacy of computer-assisted instruction (CAI) with the at-risk student population in New York City. The goals of the program were to identify systems that were effective in increasing student attendance and achievement, and in improving student and staff attitudes toward CAI. The program was assisted by the vendors of 10 CAI instructional systems, who placed their systems in appropriate schools and offered staff development, equipment maintenance, and support during the evaluation period. An assessment of the initial impact of each of the systems on student and staff attitudes indicated that school administrators, program coordinators, teachers, paraprofessionals, and students were all generally positive about the systems with which they were involved, and program results suggested that consistent use of any well-structured computer programs dedicated to mathematics and/or reading remediation benefits students in need of extra help. It was recommended that further evaluations be undertaken to determine whether test scores and attendance records support participants' feelings. Descriptions of the programs at each school include detailed descriptions of the use of each of the instructional systems utilized as well as student, teacher, and administrator attitudes at each school.

ED306307

Reporting for Effective Decisionmaking.

Herman, Joan L.; Winters, Lynn

Mar 1989, 23p. Paper presented at the Annual Meeting of the American Educational Research Association (San Francisco, CA, March 27-31, 1989).

SPONSORING AGENCY: Office of Educational Research and Improvement (ED), Washington, DC.

EDRS PRICE - MF01/PC01 plus postage.

DOCUMENT TYPE: Research Report (143); Conference Paper (150)

MAJOR DESCRIPTORS: *Computer System Design; *Decision Making; *Educational Planning; *Evaluation Utilization; *Management Information Systems; *Reports

MAJOR IDENTIFIERS: *Multilevel Evaluation Systems Project

The Multilevel Evaluation Systems Project at the University of California at Los Angeles Center for Research on Evaluation Standards and Student Testing is investigating the feasibility of developing comprehensive automated information systems that might serve the planning and policy needs of school-based educators, district administrators, and school boards. The project design involves the following phases: (1) a multidisciplinary literature review to develop guiding principles for the design of school-based management information systems; (2) a review of existing district reporting practices; and (3) interviews with the potential user groups—school boards, district administrators, and principals—to refine the picture of the means by which they process and use information on school quality. The third stage is still in progress. Phases 1 and 2, reported here, covered evaluation utilization, information representation and decision-making, human cognition and computer data display, kinds of data reported, means of presenting reported information, and adherence of reports to data presentation guidelines. Preliminary findings indicate that school planners cannot or will not use the hypothetical-deductive model of problem-solving when using data to answer questions about their schools. This points to the need to provide interpretive information in non-technical language, to key interpretations to answer questions that school planners pose when reading reports, and to educate audiences about data uses.

ED299741

How Database Management Systems Can Be Used To Evaluate Program Effectiveness in Small School Districts.

Hoffman, Tony

Feb 1988, 16p. In: *Alternative Futures for Rural Special Education. Proceedings of the Annual ACRES (American Council on Rural Special Education) National Rural Special Education Conference.* For the complete proceedings, see ED 299 726.

EDRS PRICE - MF01/PC01 plus postage.

DOCUMENT TYPE: Project Description (141); Non-Classroom Material (055); Conference Paper (150)

MAJOR DESCRIPTORS: *Computer System Design; *Database Management Systems; *Disabilities; *Individualized Education Programs; *Program Evaluation; *School Districts

MAJOR IDENTIFIERS: *Small School Districts

Sophisticated database management systems (DBMS) for microcomputers are becoming increasingly easy to use, allowing small school districts to develop their own autonomous databases for tracking enrollment and student progress in special education. DBMS applications can be designed for maintenance by district personnel with little technical support. A survey of 14 California and Oregon school districts analyzed their use of DBMS for special education records. Methods that a DBMS uses to organize data are described. A strategy is presented for developing a database for local program evaluation in small districts, by using a relational DBMS system including files for Students, Enrollments, and Scores. The model system is derived from the individualized educational planning process mandated for special education programs. Such a system can be implemented on an Apple Macintosh, IBM PC, or IBM-compatible computer. Figures illustrate sample data entry forms and sample computer-generated reports.

ED300395

HOSTS Program in the Portland Public Schools: 1983-84 Evaluation Report.

Leitner, David; Ingebo, George

Portland Public Schools, OR. Research and Evaluation Department.

Oct 1984, 46p. For the 1984-85 report, see ED 268 167.

EDRS PRICE - MF01/PC02 plus postage.

DOCUMENT TYPE: Evaluative Report (142)

MAJOR DESCRIPTORS: *Computer Managed Instruction; *Educational Assessment; *Elementary School Students; *Program Evaluation; *Tutorial Programs;

MAJOR IDENTIFIERS: *Helping One Student To Succeed; *Portland School District OR

Helping One Student To Succeed (HOSTS) is a nationally validated Education Consolidation and Improvement Act Chapter I exemplary program adopted by 24 schools in the Portland (Oregon) School District. The HOSTS program has operated in three schools since 1979-80, 17 more since 1981-82, two more since 1982-82, and two more since 1983-84. It is designed to help low performers in grades 2 through 8 learn to read by providing individualized instruction through the use of volunteer tutors. Diagnostic, prescriptive, and instructional procedures were specified by program guidelines and were essentially the same for all schools. The HOSTS program included 758 students from kindergarten through grade 8, and 906 tutors (community members, college students, high school students, cross-age students, and teaching staff and aides). A questionnaire on the use of computers in HOSTS, particularly for data management, was sent to all 23 HOSTS coordinators in the spring of 1984; the responses from 22 were analyzed. An overwhelming majority of the program coordinators indicated that the computer facilitated better use of their time and provided other benefits outside simple data management. Taken together, evaluation data for the 1983-84 year indicate that HOSTS students' reading gains are greater than those of all student groups at the same grade levels district-wide. The use of cross-aged student tutors appears to be a particularly effective HOSTS strategy. Twenty-one statistical data tables are included.

ED301167

A Record Linking System for Research on School Improvement.

Mandeville, Garrett K.

Apr 1988, 26p. Paper presented at the Annual Meeting of the American Educational Research Association (New Orleans, LA, April 5-9, 1988).
EDRS PRICE - MF01/PC02 plus postage.
DOCUMENT TYPE: Research Report (143); Conference Paper (150)
MAJOR DESCRIPTORS: *Computer Oriented Programs; *Computer Software; *Database Management Systems; *Data Processing; *Educational Research; *Student Records
MAJOR IDENTIFIERS: *South Carolina

This paper describes and evaluates a computerized system, MATCH, which is being used in South Carolina to match or link student records from year to year. The functioning of MATCH and its specific features are described, and its use in matching student test scores is detailed. The problem of mismatched records and the use of visual editing to lower the rate of mismatches are then discussed. Other current educational research applications of the system are also detailed, including expectancy tables, retention and mobility rates, the evolution of a preschool program, and research on the Program for Effective Teaching. It is suggested that the system provides a way to undertake research and evaluation that has been not been previously possible because of the high costs of creating longitudinal databases for large scale assessment data. The text is supplemented by four tables and an appendix containing rules for deciding whether a match is valid. (7 references)

ED298941

Personal Administrative Computing in Rural Schools.

Picton, John O.; And Others

Apr 1988, 10p. Paper presented at the Annual Meeting of the American Educational Research Association (New Orleans, LA, April 5-9, 1988).
EDRS PRICE - MF01/PC01 plus postage.
DOCUMENT TYPE: Research Report (143); Conference Paper (150); Test, Questionnaire (160)
MAJOR DESCRIPTORS: *Administrators; *Individual Differences; *Microcomputers; *Rural Schools; *School Administration; *Use Studies

This report examines: (1) the extent to which rural school administrators personally use microcomputers for administrative tasks; (2) whether such use is determined by differences in sex, age, size of school district, and type of administrative assignment; and (3) the kinds of administrative computer applications that are most prevalent. Subjects surveyed were 700 school administrators (elementary, middle/junior high, and high school principals) and superintendents from rural school districts in Montana, South Dakota, and Texas. Responses were received from 80% of the administrators. The survey data showed that more than half (56%) of the rural administrators did not personally use a microcomputer for administrative tasks, and 43% of the respondents stated that they had had no training in microcomputers. Although sex was not a factor in microcomputer use, age was, with younger administrators more likely to use microcomputers for administrative tasks than their older counterparts. In addition, although there was no relationship between size of school and microcomputer use, microcomputer use can be ranked (from highest to lowest) according to type of administrator: elementary principals (highest), middle/junior high principals, high school principals, and superintendents (lowest). Finally, it was found that administrators tend to use microcomputers for traditional types of administrative tasks rather than for a complete range of public school administrative functions. Four graphs and a copy of the survey instrument are included. (7 references)

ED303886

Collecting and Using Student Information for School Improvement.

Riegel, N. Blyth

Apr 1988, 33p. Paper presented at the Annual Meeting of the American Educational Research Association (New Orleans, LA, April 5-9, 1988).
EDRS PRICE - MF01/PC02 plus postage.
DOCUMENT TYPE: Evaluative Report (142); Conference Paper (150); Test, Questionnaire (160)
MAJOR DESCRIPTORS: *Computer Managed Instruction; *Computer Networks; *Database Management Systems; *Decision Making; *Educational Improvement; *Management Information Systems
MAJOR IDENTIFIERS: *Richardson Independent School District TX

This paper suggests methods for collecting and using student information for school improvement by describing how the Richardson Independent School District (RISD), Texas, determines data for effective school management decisionmaking. RISD readily accesses student information via a networked database on line with the central office's IBM mainframe and administrators' personal computers. District schools may quickly access the Richardson

Instructional Management System (RIMS) on the TI 990 minicomputer via telecables or phone lines (using 2400-baud modems). Permanent records, secondary attendance, individual schedules, grades, standardized test scores, and demographics are maintained in mainframe files. The information that RIMS generates has several applications: first, these files interface with programs that show student mobility and identify at-risk and advanced students. Thus teachers can effectively diagnose and prescribe learning remediation or enhancement once they order the student data. Second, because students and teachers are identified by identification numbers, mailing labels are easily generated for research and evaluation surveys that may perhaps analyze efficient and effective teaching and learning. More applications for the system are presently being researched in a newly formed collaboration with six other ISDs and the graduate school of education at Texas A & M University.

ED297694

Training of Teachers in the Instructional Use of Technology.

Roberts, Linda G.

Mar 1985, 94p.

SPONSORING AGENCY: Corporation for Public Broadcasting, Washington, D.C.; National Center for Educational Statistics (ED), Washington, D.C.

EDRS PRICE - MF01/PC04 plus postage.

DOCUMENT TYPE: Research Reports (143)

MAJOR DESCRIPTORS: *Audio Equipment; *Computers; *Educational Technology; *Instructional Effectiveness; *Teacher Education; *Videodisks

The purpose of this study was to survey current practices in training teachers to use audio, video, and computer technology in their classrooms, ascertain the usefulness of that training, and provide recommendations for the National Center for Education Statistics (NCES) surveys in the area of educational technology. The introduction briefly summarizes the purposes and rationale for the study as well as the data collection process. The major finding—a predominant concern with training that dealt with computers—is also noted. Section two provides an overview of the assumptions that underlie training in the instructional uses of technology. Examples of training efforts are used to illustrate how these assumptions influence the design and provision of training. The next section discusses the roles of the various training providers and gives annotated descriptions of local school district technology projects, statewide technology training programs, regional technology training and support programs, and national demonstration projects on how new technology can contribute to learning, development and education. The report concludes with a discussion of some research questions that should be addressed in order to systematically examine the assumptions around which training practices are built, and to assess how training and support activities affect the instructional use of information technologies in the classroom. An annotated bibliography, selected references, and a list of persons interviewed are included. A chart summarizing state government efforts to promote instructional computing is appended.

ED302336

Principals' Perceptions of Computer Use in Administration and Instruction.

Root, Tonja L.; Rowe, Roy H.

Feb 1987, 11p. Paper presented at the Annual Meeting of the Eastern Educational Research Association (Miami Beach, FL, February 24-27, 1987).

EDRS PRICE - MF01/PC01 plus postage.

DOCUMENT TYPE: Research Report (143); Conference Paper (150)

MAJOR DESCRIPTORS: *Administrator Attitudes; *Computer Uses in Education; *Educational Administration; *Educational Practices; *Principals

MAJOR IDENTIFIERS: *Georgia

A study was made of: (1) computer use by administrators, teachers, and students in south Georgia public schools; (2) administrators' perceptions of the ability of new teachers to use computers; and (3) the future of computers in public schools. A questionnaire was sent to 193 schools in the 44 school districts in the Valdosta State College service area. Survey questions concerned: (1) demographic information; (2) hardware; (3) administrative uses; (4) teacher uses; (5) student uses by subject area; (6) administrators' ranking of importance of instructional uses; (7) administrators' perception of preparation of new teachers for computer use; (8) administrators' predictions of computer use in public schools; and (9) administrators' perceptions of the role of Valdosta State College in preparing teachers and administrators for computer use. Returned questionnaires were divided into three groups by school type: elementary, middle, and high. Data were compiled within each group and percentages were computed. Comparisons were made among types of schools.

ED303142

Planning for Computers in Education: A Resource Handbook. Revised.

Northwest Regional Educational Laboratory, Portland, OR. Computer Technology Program.

1988, 166p.

SPONSORING AGENCY: American Federation of Information Processing Societies, Montvale, N.J.

AVAILABLE FROM: Northwest Regional Educational Laboratory, Office of Marketing, 101 SW Main Street, Suite 500, Portland, OR 97204 ($23.90).

EDRS PRICE - MF01/PC07 plus postage.

DOCUMENT TYPE: Non-Classroom Material (055)

MAJOR DESCRIPTORS: *Computer Assisted Instruction; *Curriculum Development; *Educational Planning; *Educational Resources; *Staff Development

This handbook is designed for use by educators, parents, and computer professionals who can utilize it for special assistance; for locating appropriate, relatively inexpensive, quality materials; and for developing an awareness of the broad spectrum of tasks that are essential to the effective use of computers in schools. The first seven chapters deal with relevant, specific topics: (1) technology program development; (2) curriculum development; (3) staff development; (4) software selection; (5) hardware selection; (6) computer facilities planning; and (7) budgets and funding. Each chapter first presents an overview of the topic, then a checklist, and is followed by an extensive list of resources. Chapter 8 focuses on resources for professional support and expands the previous lists of resource materials by topic area with a selected guide to national organizations, technical organizations, state level educational technology specialists, and periodicals. The handbook concludes with a glossary of computer terms and a subject index.

ED302176

Compilation of Considerations Regarding the Use of a Computer To Help Teach the School Curriculum. State Level Plans.

Valdez, Gilbert

Minnesota Association for Supervision and Curriculum Development.; Minnesota Association of School Administrators, St. Paul.; Minnesota State Dept. of Education, St. Paul.

Win 1986, 69p. In: *Learning Tomorrow: Journal of the Apple Education Advisory Council,* n2 p43-110 Win 1986. For the complete journal, see ED 302 175.

EDRS PRICE - MF01/PC03 plus postage.

DOCUMENT TYPE: Journal Article (080)

MAJOR DESCRIPTORS: *Computers; *Curriculum Development; *Decision Making; *Educational Objectives; *Systems Approach

MAJOR IDENTIFIERS: *Minnesota; *Software Development

This report provides a systematic consideration of the use of computers in the schools, including definitions of curriculum, selecting hardware and software, developing materials, and implementing the materials chosen. It is designed for use by school teachers, administrators, and/or school board members who are making decisions about future school district use of computers. A structure for decision making on school district computer implementation is provided, and it is suggested that decision making groups progress step-by-step through the document. The text is supplemented by illustrations and checklists, and a 57-item bibliography of periodicals, newspapers, books and articles. Also provided are lists of microcomputer software evaluation organizations, professional organizations, and sources of assistance.

ED302204

Superintendents at the Workstation?

Vaughan, Larry

Win 1988, 9p. In: *Learning Tomorrow. Journal of the Apple Education Advisory Council,* n4 p143-151 Win 1988. For the complete journal, see ED 302 175.

EDRS PRICE - MF01/PC01 plus postage.

DOCUMENT TYPE: Conference Paper (150); Journal Article (080)

MAJOR DESCRIPTORS: *Computer Networks; *Electronic Mail; *Information Networks; *Superintendents

MAJOR IDENTIFIERS: *AppleLink; *Apple Macintosh

This paper considers the possible creation of communications networks for school superintendents, and discusses EdLink, a pilot joint venture among Apple and GEISCO (General Electric Information Services Corporation), the joint developers of AppleLink, and the office of the New Hampshire Governor's Excellence Initiative. Arguing that EdLink (AppleLink) is flexible, easy to use, and cost effective, this report describes the use of the system by superintendents and other staff members of local school districts during the pilot study. It is noted that many superintendents participating in this program, once introduced to the MacIntosh, also used this microcomputer for a variety of other software applications, including word processing, graphics, and desktop publishing. It is concluded that users will use a chosen system only if that system is easy to use and has observable benefits.

Research

ED297717

Effect of the Computer on Problem Solving. Hinsdale District 181.

Bosma, Jennifer

Institute for Educational Research, Glen Ellyn, IL.

May 1984, 28p.

EDRS PRICE - MF01/PC02 plus postage.

DOCUMENT TYPE: Research Report (143)

MAJOR DESCRIPTORS: *Cognitive Processes; *Computer Assisted Instruction; *Grade 5; *Intermode Differences; *Problem Solving; *Spatial Ability

The effect of computer-assisted instruction on spatial problem solving skills was examined in this study. Subjects were fifth grade students from nine classes, who were divided into three treatment groups in a nonrandom fashion: (1) computer-assisted group, which used computer software designed to help students improve spatial problem solving skills for one hour per week; (2) worksheet group, which used worksheets and seatwork exercises designed to enhance spatial problem solving skills for one hour per week; and (3) control group, which had no special instruction in problem solving. Students were pre- and posttested with the New Jersey Test of Reasoning Skills, the Sequencing and Analogies subtests of the Test of Cognitive Skills, and a seven-item noncommercial spatial test. A Cognitive Skills Index (IQ score) for each student obtained in fourth grade was also used in the analysis. Results of multivariate tests indicated that the effects of group and sex were not significant, but the effect of schools was statistically significant. However, no significant differences were found between the three treatment groups, although all groups showed a gain from pretest to posttest. It is suggested that the use of computer-assisted instruction is less effective as a stand alone teaching method than it would be as a supplement to teacher instruction. The text is supplemented by four figures, and the materials provided to the teachers whose classes participated in the study are appended. (4 references)

ED305162

Presentational Features for Young Children's Recall of Information.

Calvert, Sandra L.

Apr 1989, 9p. Paper presented at the Biennial Meeting of the Society for Research in Child Development (Kansas City, MO, April 27-30, 1989).

EDRS PRICE - MF01/PC01 plus postage.

DOCUMENT TYPE: Research Report (143); Conference Paper (150)

MAJOR DESCRIPTORS: *Auditory Stimuli; *Computer Graphics; *Recall (Psychology); *Visual Stimuli

MAJOR IDENTIFIERS: *Felt Boards; *Labeling (of Objects)

The purpose of this study was to examine children's recall of verbal information as a function of stimulus action and labels. The same information was presented on either a computer or a felt board. Action and labels were expected to enhance recall, regardless of the presentation medium. In both conditions, an experimenter introduced each child to the properties of objects while reading a story. In the computer condition, when the experimenter came to a targeted object, she typed its name. A speech synthesizer then either labeled the object or did not, and the object either moved across the screen or appeared in still frame. In the felt board condition, the experimenter moved and labeled objects as the computer did. After all objects were presented, they were removed from sight. The child then named all the objects that he or she could remember, and the experimenter recorded the child's responses. A total of 40 children, equally distributed among preschool and kindergarten grades, were randomly assigned to a computer or felt board condition. For each condition, the same 24 objects, structured in six sets, were presented. Both action and labels increased children's recall of verbal information, regardless of the medium in which information was presented. Results suggest that action facilitates, rather than disrupts, children's learning of verbal information.

ED304100

The Influence of High Computer Access on Schoolwork and Student Empowerment: An Exploratory Study of the Nashville ACOT Site.

Fisher, Charles W.

Apple Computer, Inc., Cupertino, CA.

27 Jul 1988, 50p. For another paper on the Nashville ACOT site, see ED 295 600.

EDRS PRICE - MF01/PC02 plus postage.

DOCUMENT TYPE: Research Report (143)

MAJOR DESCRIPTORS: *Grade 4; *Microcomputers; *Student Behavior; *Task Analysis

MAJOR IDENTIFIERS: *Apple Classroom of Tomorrow; *Learner Control

This study examines the relationship between high computer access and "student empowerment" at the Nashville, Tennessee, site of the Apple Classroom of Tomorrow (ACOT) project. The study rests on the premise that school learning is a function of the work carried out by students in school, and that schoolwork is experienced by students as a series of specific tasks. This sequence of tasks constitutes a specific treatment which over a period of time produces thoughts, feelings, and actions which have an influence on work habits, attitudes, and achievement scores. In this study, student empowerment refers to an internal student state where the student sees himself/herself as responsible for, or in control of, the source of his/her own learning. Subjects were two fourth grade classrooms, one which participates in the ACOT project, and one which does not. Data collection included field notes, videotapes, interviews with teachers, and reviews of task materials and products. Results showed that high access to computers was associated with increased student empowerment in classroom learning settings. However, additional work needs to be undertaken to document the effects of various "profiles of student empowerment" (i.e., distribution of schoolwork task characteristics) on student learning. The text is supplemented by two figures and six tables, and two appendixes provide a copy of the task description form and a list of coding keys for several forms. (19 references)

ED302232

The Effects of Computer-Assisted Instruction on Achievement, Problem-Solving Skills, Computer Skills, and Attitude. A Study of an Experimental Program at Marrs Elementary School, Mount Vernon, Indiana.

Gilman, David A.; Brantley, Tamara

Indiana State Univ., Terre Haute. Professional School Services.

Aug 1988, 53p. Best copy available.

SPONSORING AGENCY: Indiana State Department of Education, Indianapolis.

EDRS PRICE - MF01/PC03 plus postage.

DOCUMENT TYPE: Research Report (143)

MAJOR DESCRIPTORS: *Academic Achievement; *Computer Assisted Instruction; *Intermode Differences; *Problem Solving; *Student Attitudes; *Teacher Attitudes

Two self-contained fourth grade classrooms were compared during a 1-year study conducted in a small rural community in Indiana. Pre-test measures consisted of the previous year's third grade scores on the Cognitive Abilities test and a self-developed inventory of attitude toward school and computers. The control group (n=28) received instruction throughout the study via traditional teaching methods with one computer available to the class. The experimental group (n=29), with a student/computer ratio of 2:1, began the year by learning keyboarding and becoming familiar with the computer system and the available variety of software, as well as attending to the traditional lessons with their teacher. After this initial instruction, these students spent a minimum of two hours per day at the computer, either alone, or with a partner, working with software from all areas of typical daily instruction. The measures of posttest performance for the two groups compared computer skills mastered; problem solving ability; and the Iowa Test of Basic Skills Reading, Math, and Composite Subtests. Both the raw scores on these measures and the scores adjusted for differences in intelligence were compared. Student attitudes toward school and computers, and teacher perceptions of student abilities were also compared. Although the experimental group had significantly higher scores on the computer skills test, none of the other measures produced significant results. Five appendixes and two supplemental analyses provide the study data and statistical analyses, sample measuring instruments, and a list of computer skills objectives. Ten references are included.

ED305898

Perspectives on Implementation of Learner Control in CBI.

Higginbotham-Wheat, Nancy

1988, 16p. Paper presented at the Annual Meeting of the Mid-South Educational Research Association (Lexington, KY, November 8-11, 1988).
EDRS PRICE - MF01/PC01 plus postage.

DOCUMENT TYPE: Review Literature (070); Position Paper (120); Conference Paper (150)
MAJOR DESCRIPTORS: *Academic Achievement; *Computer Assisted Instruction; *Individualized Instruction; *Pacing; *Research Needs; *Sequential Learning
MAJOR IDENTIFIERS: *Learner Control

Research in the field of computer based instruction (CBI) has led to conflicting evidence on the efficacy of learner control over instruction. Typical implementations of learner control in CBI allow learners to proceed at their own pace, control the sequence of instruction, choose the amount of practice, or decide the level of difficulty attempted. Benefits of learner control have primarily been in the affective domain, with students spending more time on the task when given control over their own instruction. Results in achievement have been mixed, however, when the learner is allowed control over the amount and sequence of instruction. Recent studies allowing the learner to manipulate contextual variables such as text density have demonstrated learner control to be a viable option in CBI. The implication arises that those variables which do not manipulate the amount of content support are those over which the learner should be allowed control. This paper provides a model for classifying the various learner control variables and suggests recommendations for implementing these variables in CBI software and research. (17 references)

ED308824

The Relationship between Elementary Teachers' Psychological Types and Their Uses of Educational Computing.

Knupfer, Nancy Nelson

Feb 1989, 20p. In: *Proceedings of Selected Research Papers presented at the Annual Meeting of the Association for Educational Communications and Technology (Dallas, TX, February 1-5, 1989).* For the complete proceedings, see ED 308 805.
EDRS PRICE - MF01/PC01 plus postage.

DOCUMENT TYPE: Research Report (143); Conference Paper (150)
MAJOR DESCRIPTORS: *Adoption (Ideas); *Computer Assisted Instruction; *Elementary School Teachers; *Psychological Characteristics; *Teacher Attitudes
MAJOR IDENTIFIERS: *Myers Briggs Type Indicator

One step toward promotion of equitable educational computing is to provide teacher education based on a better understanding of the machine/human interface, including the dynamics of teachers' decision-making about computer use. To test this notion, a study was conducted to investigate the relationship between elementary teachers' "psychological types" and their uses of instructional computing. The null hypothesis—that there is no relationship between these "types" and teachers' reactions to instructional computing—was tested. Subjects were 60 elementary school teachers who taught on a full-time basis across the general curriculum in three schools with the same socioeconomic population of students. The Myers-Briggs Type Indicator (MBTI)—a questionnaire used widely in counselling, psychology, and education to determine "psychological type" (extroversion/introversion; sensing/intuition; thinking/feeling; judging/perceptive)—was administered to all participants. Chi-square statistics revealed a significant relationship between specific MBTI dyads and several dependent variables: i.e., the amount of training teachers had taken through district-supported classes; feelings of adequacy of training; whether or not the principal encouraged computer use; factors which make it difficult to use instructional computing; and opinions about the quality of available software. Another important finding was that the school principal appeared to be the most influential person in determining how computers were used in each school. A discussion of ways in which to better involve the different "psychological types" in instructional computing concludes the paper. (27 references)

ED308825

The Effectiveness of a CBI Program for Teaching Problem Solving Skills to Middle Level Students.

Langholz, Judith; Smaldino, Sharon E.

Feb 1989, 8p. In: *Proceedings of Selected Research Papers presented at the Annual Meeting of the Association for Educational Communications and*

Technology (Dallas, TX, February 1-5, 1989). For the complete proceedings, see ED 308 805.

EDRS PRICE - MF01/PC01 plus postage.

DOCUMENT TYPE: Conference Paper (150); Research Report (143)

MAJOR DESCRIPTORS: *Computer Assisted Instruction; *Computer Software; *Instructional Effectiveness; *Problem Solving

MAJOR IDENTIFIERS: *Purdue Elementary Problem Solving Inventory

This study focuses on the effectiveness of "Solutions Unlimited," a computer software program developed to teach problem solving to middle level students. Fifty-one fourth, fifth, and sixth graders (21 girls and 30 boys) attending a private school in a small mid-west community were the subjects for this experiment; none had received prior training in problem solving. For a pretest, all students completed the Purdue Elementary Problem Solving Inventory (PEPSI), subscales of which include such things as sensing that a problem exists, judging information, analyzing details, solving problems, and verifying solutions. Subjects in the treatment group then worked in groups of three on one lesson of "Solutions Unlimited" each week for eight weeks. The control group participated in a creative dramatics group during the same period, and was given an opportunity to use the computer software following the study. Results of the study did not indicate any significance in the difference scores of the treatment group; both groups generally achieved similar change scores. There is speculation that the design of the PEPSI was not appropriate for the age group involved, and also that problem solving may need to be integrated into the entire curriculum rather than being taught for 45 minutes once a week. The strength of the computer program used is in its simulations, which create realistic life situations. It is suggested that follow-up activities should be used to stimulate the possibility of transfer of problem-solving skills learned from the computer simulations to new and novel situations. (7 references)

ED301154

Computer-Intensive School Environments and the Reorganization of Knowledge and Learning: A Qualitative Assessment of Apple Computer's Classroom of Tomorrow.

Levine, Harold G.

1988, 18p. Paper presented at the Annual Meeting of the American Educational Research Association (New Orleans, LA, April 4-9, 1988).

EDRS PRICE - MF01/PC01 plus postage.

DOCUMENT TYPE: Conference Paper (150); Evaluative Report (142)

MAJOR DESCRIPTORS: *Classroom Environment; *Curriculum Research; *Microcomputers; *Qualitative Research; *Research Design

MAJOR IDENTIFIERS: *Apple Classroom of Tomorrow

The Apple Classroom of Tomorrow (ACOT) project is an attempt to alter the instructional premises of a selected group of seven experimental classrooms in the United States by saturating them with computer technology. A recent proposal submitted to Apple Computer described STAR (Sensible Technology Assessment/Research), which includes both quantitative and qualitative indicators of change, and its implementation in the evaluation of ACOT. A focus for the qualitative engagement with the ACOT phenomenon is spelled out in this paper that is primarily interpretive in nature and theory-driven. While the "transactional" approach to evaluating cognitive development and learning can be used in this context, the research and evaluation efforts would be ordered around a different set of questions than are traditionally asked. ACOT classrooms will produce different kinds of conversations and different kinds of child-to-child interactions and computer-based problem-solving tasks. In addition, one can also observe in ACOT classrooms the complex ways in which the computer has become integrated into the lives of the students beyond the classroom. Thus, more will need to be learned about the social organization of computer-based skills and knowledge in the home, and how this supports (or detracts from) its organization in the school. Finally, there may be important teacher differences brought about by the introduction of computers into the classroom, and issues which will need to be explored include teacher morale, curriculum innovation, and student learning. Such qualitative research will be used to answer a limited set of questions about the social organization and distributed learning in the ACOT environment, and will produce research results which, though of a qualitative nature, will have independent value. (11 references)

ED305377

Determinants of Computer Use by Teachers.

McCoy, Leah P.; Haggard, Cynthia S.

Feb 1989, 18p. Paper presented at the Annual Meeting of the Eastern Educational Research Association (Savannah, GA, February 1989).
EDRS PRICE - MF01/PC01 plus postage.
DOCUMENT TYPE: Research Report (143); Conference Paper (150)
MAJOR DESCRIPTORS: *Computer Assisted Instruction; *Elementary School Teachers; *Microcomputers; *Predictor Variables; *Secondary School Teachers

A survey of 112 teachers working in 26 schools in six districts within a regional area was conducted to investigate microcomputer use by teachers. The survey instrument included items on personal characteristics, years of teaching experience, current use of computers in the classroom, confidence in personal ability to use computers, and perception of the value of computers in education. A total of 81 teachers responded. Results indicate that: (1) 25% of the respondents reported little or no use of computers; (2) 75% of the respondents reported intensive, regular, or occasional use of computers; (3) computer-assisted instruction, word processing, graphics, and record keeping were the most typical applications of computers; (4) teaching experience correlated positively with computer use; (5) elementary school teachers were more likely to use computers than were secondary school teachers; and (6) gender, confidence in ability, and perceived value of computers in education had no effect on whether or not teachers used computers in instruction. Seven data tables are included.

ED301152

Teaching Keyboarding Skills to Elementary School Students in Supervised and Unsupervised Environments.

Mikkelsen, Vincent P.; Gerlach, Gail

Apr 1988, 18p. Paper presented at the Annual Meeting of the New England Education Research Organization (Rockland, ME, April 27-29, 1988).
EDRS PRICE - MF01/PC01 plus postage.
DOCUMENT TYPE: Research Report (143); Conference Paper (150)
MAJOR DESCRIPTORS: *Computer Assisted Instruction; *Elementary School Students; *Intermode Differences; *Keyboarding (Data Entry); *Supervision

This study tested the effectiveness of a typing tutorial in teaching keyboarding skills to middle- and upper-grade elementary school students in both supervised and unsupervised environments. Subjects were 56 students enrolled in grades three through six, who were divided into two groups, supervised and unsupervised, and subdivided by grade (third and fourth together, and fifth and sixth together). Students were pretested for typing proficiency, and then completed lessons from the tutorial, "Microtype: The Wonderful World of Paws." In the supervised condition, research assistants monitored students for proper keystroking technique, while in the unsupervised condition, research assistants answered questions but offered no suggestions about proper keystroking techniques. After the completion of 14 lessons, a posttest was administered. Students were found to have made similar progress in the development of their keyboarding skills regardless of environment, supervised or unsupervised, grade level, gender, or prior experience with typing. An increase in words typed per minute occurred in all four grade levels, and in all environments, except for the sixth grade students in the supervised environment. Analysis also indicated that there was no difference between students in the supervised and unsupervised environments in terms of whether they placed their hands on the home keys, or where they focused their visual attention during the keyboarding sessions. Data analyses are displayed in four tables. (13 references)

ED308805

Proceedings of Selected Research Paper Presentations at the Convention of the Association for Educational Communications and Technology and Sponsored by the Research and Theory Division (11th, Dallas, Texas, February 1-5, 1989).

Simonson, Michael R., Ed.; Frey, Diane, Ed.

Feb 1989, 674p. For individual papers of this conference, see ED 308 806-851. For the proceedings of the 1987 and 1988 conferences, see ED 285 518 and ED 295 621.
EDRS PRICE - MF04/PC27 plus postage.
DOCUMENT TYPE: Conference Proceedings (021); Research Report (143)
MAJOR DESCRIPTORS: *Cognitive Psychology; *Computer Assisted Instruction; *Educational Technology; *Instructional Design; *Learning Theories

The 46 papers is this volume represent some of the most current thinking in educational communications and technology. Individual papers address the following topics: gender differences in the selection of elective computer science courses and in the selection of non-traditional careers; instruction for individuals with different cognitive styles; the teacher's role in integrating instructional technology; affective-cognitive learning; factors influencing mental effort; educational technology and integration; computer screen layout design; graphic format, cognitive style, and recall of quantitative data; semiotic theory and educational technology; international students and the use of educational media in their home countries; teachers and technology; elementary teachers, psychological types, and uses of educational computing; computer-based instruction, problem-solving skills, and middle-level students; secondary computer-based instruction in macroeconomics; distance education; learner control and interactive video; rules and higher order rules; satellite communications and high school education; best colors for audiovisual materials instruction; structure and organization in instructional text; instructional plans and situated learning; microcomputer-based instruction program strategies and verbal and visual testing; intelligent computer-assisted instruction; Fishbein Model and normative influences on behavior; and skipping of subordinate skills. Also included are a symposium on interactive video and Richard Clark's media research. Cumulative author and descriptor indexes for the 1989 conference proceedings are provided.

ED298938

Successful Change Agent Strategies for Overcoming Impediments to Microcomputer Implementation in the Classroom.

Strudler, Neal B.; Gall, Meredith D.

Apr 1988, 23p. Paper presented at the Annual Meeting of the American Educational Research Association (New Orleans, LA, April 5-9, 1988).

EDRS PRICE - MF01/PC01 plus postage.

DOCUMENT TYPE: Research Report (143); Conference Paper (150)

MAJOR DESCRIPTORS: *Change Agents; *Change Strategies; *Computer Assisted Instruction; *Coordinators; *Microcomputers

This study conceptualized school-based computer coordinators as change agents and analyzed their strategies, skills, and outcomes. Questionnaires and interviews were used to gather data from three computer coordinators, their supervisors, teachers, and parents. Data were analyzed case by case and then across cases, using the framework and method of data analysis developed by Matthew Miles. Results revealed that: (1) impediments to the integration of computers into the curriculum include lack of budgetary support, demands on teachers, negative experiences with previous innovations, and competing demands of other school improvement programs; (2) coordinators facilitate computer use through a combination of product-and client-centered strategies which include resource-adding, training of teachers, providing technical assistance, organizing the school's instructional computing program, energizing and motivating the client, and collaborative problem solving; (3) effective coordinators must have technical expertise as well as interpersonal skills; (4) outcomes resulting from the computer coordinator's work include improved teacher skills, implementation of school goals, teacher satisfaction, and greater student comfort with computers. Guidelines for the implementation of the coordinator role are suggested, and several directions for future research are recommended. (25 references)

Software Evaluation

ED305061

SEED Software Annotations.

Bethke, Dee; And Others

Southeastern Educational Improvement Laboratory, Research Triangle Park, NC.

Feb 1988, 203p. For other software annotations from Project SEED, see ED 294 564 and ED 295 592.

EDRS PRICE - MF01/PC09 plus postage.

DOCUMENT TYPE: Directory (132); Book-Product Review (072); Non-Classroom Material (055)

MAJOR DESCRIPTORS: *Computer Assisted Instruction; *Computer Games; *Computer Software; *Courseware; *Menu Driven Software

This document provides a composite index of the first five sets of software annotations produced by Project SEED. The software has been indexed by title, subject area, and grade level, and it covers sets of annotations distributed in September 1986, April 1987, September 1987, November 1987, and February 1988. The date column in the index indicates the set of annotations in which the software review can be found. In some cases, software publishers are starred to indicate that the publisher has changed, and the new publishers are listed at the end of the index. Also included are two sets of SEED software annotations—a November 1987 issue with 61 reviews and a February 1988 issue with 70 reviews, for a total of 131 reviews. Each annotation contains information on the software subject area; grade level; backup and preview policy; prices; hardware and peripheral requirements; a short description of the contents; short summaries of software strengths, weaknesses, and uses; a recommendation; and producer's comments. Subjects covered include art education, business/vocational education, computer literacy/technology, foreign language, health/safety, keyboarding, language arts/reading, library/media, math, preschool/early childhood, problem solving, science, social studies, traffic safety, utility/productivity tools, and vocational education.

ED299022

1988 Survey of Early Childhood Software.

Buckleitner, Warren

High/Scope Educational Research Foundation, Ypsilanti, MI.

1988, 155p.

REPORT NO.: ISBN-0-93-1114-32-2

AVAILABLE FROM: High/Scope Press, 600 North River Street, Ypsilanti, MI 48198 ($20.00).

EDRS PRICE - MF01 plus postage. PC not available from EDRS.

DOCUMENT TYPE: Non-Classroom Material (055); Computer Programs (101); Book-Product Review (072)

MAJOR DESCRIPTORS: *Computer Software; *Instructional Material Evaluation; *Microcomputers; *Young Children

This book reviews over 250 computer programs oriented toward the three-to six-year age range. Each program has been screened with checklists designed to rate such factors as ease of use, content strength, instructional design, and developmental appropriateness. The opening section contains an alphabetical list of all the software titles covered, and an illustrated guide to understanding the ratings given to each program. A "scan" page summarizes general statistical information about the survey, including how many programs are available for each kind of computer, how many employ a joystick, and how many require a color monitor. The second section consists of alphabetically arranged program descriptions, which include a narrative description, numerical ratings, and a sample screen picture for each program. Practical information, such as retail price and the computer and equipment needed to make the program work, is provided for each program. The third section contains the seven-page form used to evaluate the programs, and an explanation of how numerical ratings were calculated. Appendices answer common questions about software producers, content areas, number of titles in conceptual areas, programs for different computer brands, and the meaning of terms.

ED298175

How To Evaluate Educational Software Easily and Efficiently. For Teachers, Parents and Home Computer Users. Self-Training Package.

Chang, Linda Li

Apr 1986, 50p.

EDRS PRICE - MF01/PC02 plus postage.

DOCUMENT TYPE: Non-Classroom Material (055); Test, Questionnaire (160)

MAJOR DESCRIPTORS: *Computer Software; *Programed Instructional Materials

MAJOR IDENTIFIERS: *Software Evaluation

This self-training package is designed to help microcomputer users select appropriate and efficient educational software packages by using a software evaluation system. It is mainly designed for school teachers and parents. The system consists of a Criteria Rating Form (CRF) and a personal evaluation. The CRF—a five-point scale from excellent to not present and not applicable—objectively evaluates software quality. It concerns the accuracy and value of content, effectiveness of instructional design, appropriate record-keeping and management function, and ease of use. The personal evaluation provides four open-ended questions eliciting the user's judgments on the quality and usefulness of the software. The package is designed for use on the Apple IIe computer. Needs identification for selecting the right type of software, the use of the educational software evaluation system, and a practice evaluation are included (these three units are estimated to take 110 minutes to complete). Appendix 1 contains the system rating forms, and Appendix 2 provides an example of how the system is used.

ED307856

The 1989 Educational Software Preview Guide.

Educational Software Evaluation Consortium, Menlo Park, CA.

1988, 109p. This 1988-89 guide was developed at the California Software Evaluation Forum (Menlo Park, CA, May 9-12, 1988). For the 1987 Preview Guide, see ED 289 482. Titles on inside and outside cover page differ slightly.
SPONSORING AGENCY: California State Department of Education, Sacramento.
AVAILABLE FROM: International Council for Computers in Education, University of Oregon, 1787 Agate Street, Eugene, OR 97403 ($8.00, prepaid).
EDRS PRICE - MF01 plus postage. PC not available from EDRS.
DOCUMENT TYPE: Non-Classroom Material (055); Book-Product Review (072)
MAJOR DESCRIPTORS: *Courseware; *Evaluation Criteria; *Instructional Material Evaluation; *Microcomputers

Developed to help educators locate microcomputer software programs they may want to preview for students in grades K-12, this guide lists commercially available instructional software programs that have been favorably reviewed by members of the Educational Software Evaluation Consortium. Programs are arranged alphabetically by title within curriculum areas: art; business education (accounting/bookkeeping, economics, and typing); computers; electronic periodicals; health, instructional tools (authoring system, classroom management, database, graphics generator, instructional materials generator, spelling checker, spreadsheet, student study aid, telecommunications, and word processor); keyboarding; language arts; library media skills; mathematics (advanced mathematics, algebra, geometry/measurement, number, problem solving and statistics); music; preschool/early childhood; problem solving/logic; science (astronomy, biology, chemistry, earth science, environmental education/ecology, general science, physics, and scientific method/lab equipment); social science (economics, geography, government/political science, history, and sociology); tests and testing; vocational education/industrial arts; world languages (French, German, Spanish, and language tool). Information provided for each program includes the title, publishers, computer and instructional mode specifications, grade level(s), price, and a very brief annotation. A list of review participants, abbreviation keys, an alphabetical list of titles, publishers' addresses, 11 articles and a policy statement on software use, review, and evaluation, eight of which are reprints from *Computers in Composition Instruction* or *The Computing Teacher* are also included.

ED297703

Software Selection, Evaluation and Organization and Software Reviews. Article Reprints.

International Council for Computers in Education, Eugene, OR.

[1985], 117p. *Computing Teacher*, 1982-1986. For a previous collection of reprints from the same source, see ED 262 757.
AVAILABLE FROM: International Council for Computers in Education, University of Oregon, 1787 Agate Street, Eugene, OR 97403.
EDRS PRICE - MF01 plus postage. PC not available from EDRS.
DOCUMENT TYPE: Collection (020); Non-Classroom Material (055); Journal Article (080)
MAJOR DESCRIPTORS: *Computer Software; *Computer Uses in Education; *Evaluation Methods; *Instructional Material Evaluation; *Media Selection
MAJOR IDENTIFIERS: *Software Evaluation

This collection of reprints from *The Computing Teacher* contains 11 articles on the selection, the evaluation and organization of software published between August 1983 and March 1986, as well as more than 20 reviews of educational software packages published between December 1982 and June 1986. The articles are: (1) "The New Wave of Educational Software" (Ludwig Braun); (2) "How Do Teacher and Student Evaluations of CAI Software Compare?" (Barbara Signer); (3) "The DISC Model for Software Evaluation and Support Material Design" (Shelly Yorke Rose and Carol Klenow); (4) "Cooperative Learning: One Key to Computer Assisted Learning" (David W. Johnson and Roger T. Johnson); (5) "Teacher + Computer = More Learning" (Cathy Chmielowski Carney); (6) "Teaching with Your Fingertips " (Sharon Burrowes); (7) "Selecting Computer Software—We Take It Seriously " (Jean Donham); (8) "The Software Selection Process: Some Management Questions" (Anne Batey); (9) "Enrichment Courseware for Middle School Mathematics" (Lois Edwards); (10) "Doing Science" (Richard C. Adams); and (11) "Project DISC: Developing Indian Software Curriculum" (Carolyn Jacobi and Carl Edeburn). The computer software programs reviewed are designed for use in teaching problem-solving and reasoning skills; Boolean logic and basic elements of computer circuitry; reading skills; graphics programming; computer literacy; physics; science; social studies; writing; word processing; spelling; music; reading readiness; planning, writing and studying; animation, graphics, art; keyboarding; mathematics; robotics; Logo; and geometry. Other programs include grading systems, integrated applications, and readability analysis. Each review provides the name of the software program, the name of the reviewer, the producer's name, target audience, hardware requirements, and cost.

ED303141#

Only the Best: The Discriminating Software Guide for Preschool-Grade 12. 1989 Edition.

Neill, Shirley Boes; Neill, George W.

Education News Service, Sacramento, CA.

1988, 129p.; For the 1987-88 edition, see ED 286 471.

REPORT NO.: ISBN-0-936423-02-1

AVAILABLE FROM: Education News Service, PO Box 1789, Carmichael, CA 95609 ($24.95 prepaid).

DOCUMENT NOT AVAILABLE FROM EDRS.

DOCUMENT TYPE: Non-Classroom Material (055); Book-Product Review (072); Directory (132)

MAJOR DESCRIPTORS: *Computer Software Reviews; *Courseware; *Evaluation Criteria

MAJOR IDENTIFIERS: *Software Evaluation

Designed to aid teachers, school administrators, and parents in selecting educational software for grades K-12, this guide lists 226 programs chosen form 8,000 evaluations conducted by 32 evaluation services in the United States and Canada. Following the introduction, which provides a detailed explanation of how the programs were selected, the guide is divided into four parts. Part I provides an alphabetical listing by title of the 159 most highly rated programs as well as a listing by subject areas, which includes courseware for the arts, business education, early childhood education, foreign language, health education, language arts, mathematics, problem solving, science, social studies, student helpers, tool programs, and typing. The description for each of these programs includes the subject area, copyright date, producer, hardware requirements, price, a brief description of the program, grade level(s), brief tips for teachers, evaluators and evaluations received, and magazine review citations. Part II lists the 67 nearly qualifying program by subject area and includes program titles, the producer, computer system(s), price, grade level(s), and evaluators. Part III lists the 141 most highly rated programs in the 1987-1988 edition. Information provided for these programs is limited to the publisher, curriculum area, and computer system. Part IV provides the names, addresses, and telephone numbers of the producers of software listed in this edition.

ED304126

Courseware Evaluation: The U.S. Experience.

Taylor, Robin

15 Apr 1987, 46p.

EDRS PRICE -MF01/PC02 plus postage.

DOCUMENT TYPE: Review Literature (070); Position Paper (120); Test, Questionnaire (160)

MAJOR DESCRIPTORS: *Computer Assisted Instruction; *Computer Software; *Evaluation Criteria; *Instructional Material Evaluation; *Material Development; *School Districts

MAJOR IDENTIFIERS: *Software Selection

This paper examines the development of computer software in the United States and the processes used by school districts to evaluate software for purchase. Topics considered include major software development trends, development criteria, and production costs; software selection and evaluation, including selection processes, and evaluation and selection criteria; software use in schools including classroom and administrative uses; and the availability of data on the effectiveness of commercially published software. An appendix provides examples of evaluation forms, and 13 references are included.

ED303702

Software for Substance Abuse Education: A Critical Review of Products.

Weaver, Dave

Northwest Regional Educational Laboratory, Portland, OR.

Oct 1988, 29p.

SPONSORING AGENCY: Office of Educational Research and Improvement (ED), Washington, DC.

EDRS PRICE - MF01/PC02 plus postage.

DOCUMENT TYPE: Book-Product Review (072)

MAJOR DESCRIPTORS: *Alcohol Abuse; *Courseware; *Drinking; *Drug Education; *Substance Abuse

This document provides critical reviews of 18 computer software programs designed to provide some form of substance abuse education for students in elementary and secondary schools. Evaluation and review procedures used to create this publication are discussed in the introduction and the products which were evaluated are listed. Overall results of the review are summarized in a section on findings and an evaluation summary table gives the final scores each program package received on each evaluation criteria used. The findings section notes that: (1) 11 of the 18 programs were linear tutorials with very little branching and all of the tutorials were very text-intensive, requiring a considerable amount of reading; (2) most of the packages did a fairly good job of stressing the harmful effects of alcohol and other drug use, but legality of alcohol and drug use was addressed in only a few instances; (3) none of the programs were intended to be comprehensive for all grades; and (4) programs received low scores for supplementary materials which accompanied the program disk. The products reviewed were rated as good at accurately presenting content, avoiding stereotyping, and being easy to use. For each of the 18 programs, the product description section lists the program title, hardware needed, cost, copyright year, audience, a brief description, possible uses, strengths, weaknesses, and additional comments. A list of producer contact information is included and the software evaluation form is appended.

Telecommunications

ED305900

Microcomputer Telecommunications. MSBA Technology Services. 1988 Spring Special Topic Workshop.

Mihalevich, J. Richard; McClaskey, Michael

Missouri School Boards Association, Columbia.

1988, 32p.

EDRS PRICE - MF01/PC02 plus postage.

DOCUMENT TYPE: Instructional Material (051); Project Description (141)

MAJOR DESCRIPTORS: *Dial Access Information Systems; *Electronic Mail; *Microcomputers; *Online Searching; *Online Systems; *Telecommunications

This manual for a workshop on the use of telecommunications in the schools begins by presenting a connection decision chart, the session objectives, and the agenda. Information presented for the workshop covers the basic concepts and elements of telecommunications; the specific elements of a telecommunications system; the evaluation and selection of hardware and software; the evaluation and selection of online services; and typical dial-up sessions with the University of Missouri's LUMIN library catalog, the Missouri School Boards Association's EDNET bulletin board system, and CompuServe. Objectives and procedures are then provided for four hands-on activity sessions: (1) IBM dial-up using ProComm+ to access a remote online service; (2) data transfer between a TRS-80 laptop computer and an IBM PS/2 Model 25 to demonstrate how information can be passed from one ASCII machine to another ASCII machine with differing operating systems; (3) Apple hardware/software setup and configuration; and (4) IBM hardware/software setup and configuration. A glossary of telecommunications terminology, a computer telephone book for Missouri, and a list of selected computer bulletin boards around the country are included, as well as a list of resources for further information.

ED302211

The Hawaii Global TELEclass Project and Multimedia Computer-Based Educational Telecommunication (CBET).

Southworth, John H.

Nov 1986, 25p. In: *Learning Tomorrow. Journal of the Apple Education Advisory Council*, n4 p273-298 Win 1988. For the complete journal, see ED 302 197.

EDRS PRICE - MF01/PC01 plus postage.

DOCUMENT TYPE: Conference Paper (150); Journal Article (080)

MAJOR DESCRIPTORS: *Computer Networks; *Educational Technology; *International Programs; *Multimedia Instruction; *Telecommunications; *Teleconferencing

MAJOR IDENTIFIERS: *Hawaii

Telecommunications projects underway in Hawaii include various multimedia computer-based educational telecommunications (CBET) and multimode node telecommunications (MMN) projects. CBET uses a computer network to send messages rather than an ordinary telephone call, and MMN is a technique for transferring messages, data, and images between electronically incompatible systems. Both systems are used in an asynchronous manner, whereby sender and receiver need not exchange information at the same time, and in a synchronous manner which is both immediate and interactive. A CBET project in Hawaii is the Hawaii Global TELEclass project, which has involved Hawaiian students in foreign language exchanges with students from Japan, as well as in other foreign language exchanges in Hawaii. As TELEclass continues into its third year, exchanges involving other languages and other subject fields are under consideration. The TELEclass experience also provides information about the establishment of a telecommunications program that can be transferred to other similar programs.

ED305041

Computer-Mediated Communication Systems as Mass Communication Media.

Steinfield, Charles W.; Fulk, Janet

Oct 1988, 34p. Paper presented at the Telecommunications Policy Research Conference (16th, Airlie House, Warrenton, VA, October 30-November 1, 1988). For other papers of this conference, see ED 305 039-059.

EDRS PRICE - MF01/PC02 plus postage.

DOCUMENT TYPE: Review Literature (070); Research Report (143); Conference Paper (150).

MAJOR DESCRIPTORS: *Electronic Mail; *Mass Media; *Organizations (Groups); *Telecommunications; *Users (Information)

MAJOR IDENTIFIERS: *Computer Mediated Communication Systems

This examination of the use of computer-mediated communication (CMC) systems by individuals for the purpose of broadcasting messages to large numbers of recipients begins by contrasting CMC broadcasting with traditional conceptions of interpersonal and mass communications. Several alternative theoretical perspectives are then examined, and a set of propositions are derived regarding potential uses and effects of CMC broadcasting in an organizational setting. Also described is a preliminary empirical test of several propositions which is based on a survey of electronic mail users in one large organization. Finally, a highly speculative look is taken at potential policy issues suggested by the conceptual and empirical analyses as they relate to both businesses and home consumers. The text is supplemented by four tables and 53 references are provided.

ED305896

Computer Mediated Communications and Tailorability.

Turoff, Murray; And Others

Sep 1988, 14p. Paper presented at the Computer Supported Cooperative Work Conference (2nd, Portland, OR, September 26-28, 1988).

EDRS PRICE - MF01/PC01 plus postage.

DOCUMENT TYPE: Project Description (141); Conference Paper (150)

MAJOR DESCRIPTORS: *Computer Networks; *Computer System Design; *Electronic Mail; *Man Machine Systems; *Teleconferencing; *Users (Information)

MAJOR IDENTIFIERS: *Computer Mediated Communication Systems

Since the early 1980s the evolution of computer mediated communications (CMC) systems designed to support collaborative work has been characterized by two trends. One is the proliferation of new systems to take advantage of technological changes; the second is the incorporation of functionality into highly specialized or tailored application oriented systems. TEIES (Tailorable Electronic Information Exchange System) at the New Jersey Institute of Technology is an example of such a system. It has been designed to be integrated with other computer resources and to allow individuals and groups to tailor the system to their application needs. It is also designed to serve the frequent user who is using CMC for a significant part of his or her daily communications. The TEIES effort represents a new generation of CMC software that will allow the design, development, and evaluation of tailored collaborative systems. It provides the toolbox to overcome the tremendous programming bottleneck present in the development of collaborative systems. The forms-based interface for TEIES and the open ended concepts of privileges, roles, activities, group sharing, and notifications allow change to the interface or to the basic metaphor of the communications process and associated list processing. (2 figures and 24 references)

Tests, Testing

ED 307 287

The MDT Innovation: Machine-Scoring of Fill-in-the-Blank Tests.

Anderson, Paul S.

Multi-Digit Technologies Corporation, Chicago, IL.

1987, 209p. Financial support also provided by grants from Colonial Ice Cream, Inc.
SPONSORING AGENCY: Illinois State Department of Commerce and Community Affairs, Springfield.; Illinois State University, Normal. Department of Geography-Geology.
AVAILABLE FROM: Multi-Digit Technologies Corporation, P.O. Box 14, Normal, IL 61761 ($14.95).
EDRS PRICE -- MF01/PC09 plus postage.
DOCUMENT TYPE: Evaluative Report (142); Non-Classroom Material (055)
MAJOR DESCRIPTORS: *Computer Assisted Testing; *Scoring; *Technological Advancement; *Test Scoring Machines
MAJOR IDENTIFIERS: *Fill in the Blank Tests; *Multi Digit Tests

The Multi-Digit Technologies (MDT) testing technique is discussed as the first major advance in computer assisted testing in several decades. The MDT testing method uses fill-in-the-blank or completion-type questions, with an alphabetized long list of possible responses. An MDT answer sheet is used to record the code number of the answer. For computer scoring, the answer cells are filled in with a soft pencil. Part A of this work gives the background and developmental history of the MDT approach. Part B provides practical instructions on how to use the method, including many helpful hints discovered in the 4 years of development and testing. In Part C, four chapters focus on the educational implications of the MDT techniques. Key topics include: (1) cognitive achievement and retention; (2) mastery training; (3) financial costs and benefits; (4) higher order learning; and (5) research and development. These fundamentals explain how MDT techniques can improve education while lowering costs. The MDT method can allow up to 1,000 alternative responses. The computer's memory of the words that correspond to each label number means vastly improved feedback for students, teachers, administrators, and parents. Appendix 1 gives computer program documentation and installation instructions. Appendix 2 is a warning about unauthorized copying of computer software. Appendix 3 is a list of the MDT answer banks available as of February 1987.

ED305380

Reformulating Testing to Measure Thinking and Learning. Technical Report No. 6898.

Collins, Allan
Bolt, Beranek and Newman, Inc., Cambridge, Mass.
Sep 1987, 33p.
SPONSORING AGENCY: Office of Naval Research, Arlington, VA. Personnel and Training Research Programs Office.
EDRS PRICE -- MF01/PC02 plus postage.
DOCUMENT TYPE: Evaluative Report (142)
MAJOR DESCRIPTORS: *Cognitive Measurement; *Computer Assisted Testing; *Educational Testing; *Expert Systems; *Learning Strategies; *Testing Problems
MAJOR IDENTIFIERS: *Intelligent Tutoring Systems

This paper discusses systemic problems with testing and outlines two scenarios for reformulating testing based on intelligent tutoring systems. Five desiderata are provided to underpin the type of testing proposed: (1) tests should emphasize learning and thinking; (2) tests should require generation as well as selection; (3) tests should be integral to learning; (4) tests should serve multiple purposes; and (5) tests should be valid with respect to all their purposes. These desiderata are considered critical for a new, more benign learning and testing environment. In the first scenario outlined, intelligent tutoring systems become devices for administering problem-solving tests to students. The second, more radical scenario for an integrated testing and learning environment, is implicit in an analysis of learning in the LISP tutor. In this scenario, the computational medium enables evaluation to be conducted on the process of learning; rather than taking tests, the student is tested in the course of teaching. The report's distribution list is appended.

ED304445

Improving Schools through Inservice Test Construction: The Rossville Model.

Gilman, David Alan
Nov 1988, 35p.
EDRS PRICE -- MF01/PC02 plus postage.
DOCUMENT TYPE: Research Report (143); Test, Questionnaire (160)
MAJOR DESCRIPTORS: *Educational Improvement; *Faculty Development; *Inservice Teacher Education; *Minimum Competency Testing; *Teacher Made Tests; *Test Construction
MAJOR IDENTIFIERS: *Competency Rossville Model

A method for improving curriculum and schools through the local development of competency tests in basic skills—the Competency-

Rossville Model (CRM)—is outlined. The method was originated in the school system of Rossville (Illinois) and has been tested in five other midwestern school systems. The approach leads the faculty of the school, with the guidance of a measurement consultant, in the development of a series of grade-level tests to measure mastery in basic skills achievement. This method of test development serves to articulate the curriculum; provides a useful, relevant, and appropriate achievement testing program; and provides a management system for the improvement of basic skills instruction. The CRM is compared favorably to the norm referenced testing model. The CRM program includes: (1) inservice instruction of faculty in an alternate model of evaluation of academic achievement; (2) a committee of school faculty formed around use of the Delphi method to confer with their fellow teachers; (3) grade-level representatives in charge of informal committees for each grade level; (4) informal teacher conferences, involving each grade level, to establish a list of skills to be mastered by students; (5) development of test items; and (6) computer-assisted interpretation of tests. This type of inservice development project has been successful in increasing faculty morale, improving basic skills instruction, and improving school achievement testing programs. The project involves faculty actively in curriculum development, results in valid and reliable tests, and provides information that is valuable and useful to teachers. Nine figures are provided, and a sample skill-referenced math test is appended.

ED300449

Experiences in the Application of Item Response Theory in Test Construction.

Green, Donald Ross; And Others

Apr 1988; 25p.; Paper presented at the Annual Meeting of the National Council on Measurement in Education (New Orleans, LA, April 6-8, 1988).

EDRS PRICE -- MF01/PC01 plus postage.

DOCUMENT TYPE: Position Paper (120); Conference Paper (150); Evaluative Report (142)

MAJOR DESCRIPTORS: *Achievement Tests; *Latent Trait Theory; *Test Construction

MAJOR IDENTIFIERS: *Three Parameter Model

Potential benefits of using item response theory in test construction are evaluated, based on the experience and evidence accumulated during 9 years of using a three-parameter model in the construction of major achievement batteries. Specific benefits covered include obtaining sample-free item calibrations and item-free person measurement, automatically equating various subsets of a pool of calibrated items, decreasing standard errors of scores without increasing the number of items used, assessing item bias independently of item difficulty, determining the adequacy of the tryout pool of items, establishing computer-generated ideal tests drawn from item pools as targets for test developers, and controlling the standard error of the test selected at any desired set of score levels. The matter of test dimensionality is also addressed. Although the three-parameter model appears to be very powerful, users must be cautious in its application due to the fact that the assumptions of the model are rarely fully met. Six graphs conclude the document.

ED298131#

ITEMBANK: An Item Bank Package for the IBM PC. User's Guide, Version 1.0.

Harnisch, Delwyn L.; Rotheroe, Dave

Illinois University, Urbana. Institute for Child Behavior and Development.

Sep 1986, 52p. Low-cost basic manuals are available. For related documents, see ED 298 132-134.

AVAILABLE FROM: Dr. Delwyn L. Harnisch, Chairperson, Office of Educational Testing, Research, and Service, University of Illinois at Urbana-Champaign, Room 123, Institute for Child Behavior and Development, 51 Gerty Drive, Champaign, IL 61820.

DOCUMENT NOT AVAILABLE FROM EDRS.

DOCUMENT TYPE: Research Report (143); Non-Classroom Material (055)

MAJOR DESCRIPTORS: *Computer Assisted Testing; *Item Banks; *Menu Driven Software; *Microcomputers

MAJOR IDENTIFIERS: *IBM Personal Computer; *User Guides

This manual describes and explains the commands available in the ITEMBANK package (a comprehensive test item bank). True-false, multiple-choice, short-answer, and essay items, as well as the associated answers, can be accommodated. Content domains and behavior categories exist for item classification. Most menus have instant action. Items and tests are displayed on the screen in a print format. Each item file can have hundreds of items, and the number of item files is unlimited. Items can be printed for easy reference. Statistical data are stored for each item and each test, enabling performance on a test to be predicted. Stored items can be selectively incorporated into a test and a powerful editor allows for easy manipulation of tests. Materials other than items can be easily added to a test. Test questions are automatically numbered. Multiple forms of the same test can be created easily by scrambling or ordering the test questions manually or automatically. Tests and answer keys can easily be printed or displayed. Cross-references between different forms of the same test can be generated automatically.

ED298132#

SFAP: Scan-Tron Forms Analysis Package for the IBM-PC. User's Guide, Version 2.0.

Harnisch, Delwyn L.; And Others

Illinois University, Urbana. Institute for Child Behavior and Development.

May 1986, 52p. For related documents, see ED 298 131-134.

AVAILABLE FROM: Dr. Delwyn L. Harnisch, Chairperson, Office of Educational Testing, Research, and Service, University of Illinois at Urbana-Champaign, Room 123, Institute for Child Behavior and Development, 51 Gerty Drive, Champaign, IL 61820.

DOCUMENT NOT AVAILABLE FROM EDRS.

DOCUMENT TYPE: Research Report (143); Non-Classroom Material (055)

MAJOR DESCRIPTORS: *Computer Assisted Testing; *Menu Driven Software; *Microcomputers

MAJOR IDENTIFIERS: *IBM Personal Computer; *User Guides

The Scan-Tron Forms Analysis Package (SFAP) is a collection of integrated programs that allow an IBM-PC (or compatible) to collect data from a Scan-Tron 1200 forms reader. In addition to the basic data acquisition capability, the SFAP has additional capabilities related to the viewing and formatting of incoming data. When used in combination with the Test Analysis Package or the Student-Problem Package, the SFAP provides an easy and manageable link between raw data and organized results. The SFAP provides four primary options: (1) reading of forms using the Scan-Tron 1200; (2) data conversion from raw data to an 80-column card image; (3) viewing and printing of data files; and (4) creation of new form parameters.

ED298133#

SPP: Student Problem Package on the IBM-PC. User's Guide, Version 1.0.

Harnisch, Delwyn L.; Romy, Neil

Illinois University, Urbana. Institute for Child Behavior and Development.

Feb 1985, 39p. For related documents, see ED 298 131-134.

AVAILABLE FROM: Dr. Delwyn L. Harnisch, Chairperson, Office of Educational Testing, Research, and Service, University of Illinois at Urbana-Champaign, Room 123, Institute for Child Behavior and Development, 51 Gerty Drive, Champaign, IL 61820.

DOCUMENT NOT AVAILABLE FROM EDRS.

DOCUMENT TYPE: Research Report (143); Non-Classroom Material (055)

MAJOR DESCRIPTORS: *Computer Assisted Testing; *Item Analysis; *Menu Driven Software; *Microcomputers; *Student Problems

MAJOR IDENTIFIERS: *IBM Personal Computer; *User Guides

This is a user's guide to the Student-Problem Package (SPP), a software package for the IBM-PC that provides three sub-programs for analyzing item response patterns. These analyses are based on student-problem (S-P) curve theory. The SPP User's Guide provides: (1) a brief introduction to response pattern analysis; (2) an overview of the sub-program capabilities; and (3) descriptions of the type of input data required as well as output generated. Directions are provided for creating a data file, specifying a file, entering descriptive test information, entering the answer key, selecting the S-P chart response characters, entering the classification table cut points, creating an output file, analysis of a data set resulting in a categorized S-P chart, and displaying a copy of a report.

ED298134#

Test Analysis Package (TAP): A Microcomputer Questionnaire and Item Analysis Program. User's Guide for the IBM-PC. Version 2.0.

Harnisch, Delwyn L.; And Others

Illinois University, Urbana. Institute for Child Behavior and Development.

Apr 1985, 56p. For related documents, see ED 298 131-133.

AVAILABLE FROM: Dr. Delwyn L. Harnisch, Chairperson, Office of Educational Testing, Research, and Service, University of Illinois at Urbana-Champaign, Room 123, Institute for Child Behavior and Development, 51 Gerty Drive, Champaign, IL 61820.

DOCUMENT NOT AVAILABLE FROM EDRS.

DOCUMENT TYPE: Research Report (143); Non-Classroom Material (055)

MAJOR DESCRIPTORS: *Computer Assisted Testing; *Item Analysis; *Menu Driven Software; *Microcomputers; *Test Scoring Machines
MAJOR IDENTIFIERS: *IBM Personal Computer; *User Guides

The Test Analysis Package (TAP) consists of three microcomputer programs that edit, score, summarize, and analyze student test data. Features of the TAP system include: (1) an editor that allows creation of a student test data file without the use of a separate word processor; (2) a scoring mechanism that can score a test data file of 999 students and 254 items against either a stored answer key or one created by the user; (3) a report generator that provides summary reports of statistics for students, items, and the test; (4) a test analyzer that generates various statistical summaries and graphic displays on test quality and student performance; and (5) a system utility that allows users to select a sub-set of the total test items for inclusion in the item analysis. No programming experience or extensive computer knowledge is assumed/required of users.

ED304626

Counselors' Use of Tests: Process and Issues. Highlights: An ERIC/CAPS Digest.

Hoover, Robert M.

ERIC Clearinghouse on Counseling and Personnel Services, Ann Arbor, MI.

1988; 3p.

SPONSORING AGENCY: Office of Educational Research and Improvement (ED), Washington, DC.
AVAILABLE FROM: ERIC/CAPS, 2108 School of Education, University of Michigan, Ann Arbor, MI 48109-1259.
EDRS PRICE -- MF01/PC01 plus postage.
DOCUMENT TYPE: ERIC Product (071)
MAJOR DESCRIPTORS: *Counseling Techniques; *Ethics; *Test Interpretation; *Test Use

This digest on test uses in counseling discusses the selection, administration, and scoring of tests; the interpretation of test results; and communication of results to clients. It examines such issues in testing as confidentiality, counselor preparation, client involvement in the testing process, computerized testing, and ethics.

ED304462

The Equivalence of Scores from Automated and Conventional Educational and Psychological Tests: A Review of the Literature. College Board Report No. 88-8.

Mazzeo, John; Harvey, Anne L.

College Entrance Examination Board, New York, N.Y.; Educational Testing Service, Princeton, N.J.

1988; 33p.

AVAILABLE FROM: College Board Publications, P.O. Box 886, New York, NY 10101-0886 ($6.00).
EDRS PRICE -- MF01 plus postage. PC not available from EDRS.
DOCUMENT TYPE: Review Literature (070); Research Report (143)
MAJOR DESCRIPTORS: *Computer Assisted Testing; *Educational Testing; *Equated Scores; *Psychological Testing; *Psychometrics
MAJOR IDENTIFIERS: *Paper and Pencil Tests

A literature review was conducted to determine the current state of knowledge concerning the effects of computer administration of standardized educational and psychological tests on the psychometric properties of these instruments. Students were grouped according to a number of factors relevant to the administration of tests by computer. Based on the studies reviewed, it seems that: (1) the rate at which examinees omit items in an automated test may differ from the rate at which they omit items in a conventional presentation; (2) scores on automated personality inventories are lower than scores obtained using the conventional testing format; (3) scores from automated versions of speed tests are not likely to be comparable with scores on paper-and-pencil versions; (4) presentation of graphics in an automated test may affect score equivalence; (5) tests containing items based on reading passages can become more difficult when presented via computer; and (6) the possibility of asymmetric practice effects may make it wise to avoid equating studies based on single-group counterbalanced designs. Ten data tables are provided.

ED298170

Examinee Selection of Subsequent Item Difficulty: Effects of Current Item Performance and Item Feedback.

Plake, Barbara S.; Wise, Steven L.

[1986], 13p.

EDRS PRICE -- MF01/PC01 plus postage.
DOCUMENT TYPE: Research Report (143)
MAJOR DESCRIPTORS: *Adaptive Testing; *College Students; *Difficulty Level; *Feedback; *Item Analysis; *Test Format

One question regarding the utility of adaptive testing is the effect of individualized item arrangements on examinee test scores. The purpose of this study was to analyze the item difficulty choices by examinees as a function of previous item performance. The examination was a 25-item test of basic algebra skills given to 36 students in an introductory statistics course at a large midwestern university during the fall 1985 semester. The test was administered via a microcomputer. Categorical data identifying the subjects' performance on current item, feedback condition, and choice of difficulty for next item were submitted to a log-linear analysis. A significant performance on current item by choice of difficulty for next item interaction was found. When examinees did not answer the current item correctly, they tended to request an easier item next; when they correctly answered the current item, they tended to request a harder item next. Preference for the difficulty of the next item appears to be a function of how well students believe they performed on the current item. Most adaptive testing item selection algorithms identify an easier item to be administered upon incorrect performance and a harder item subsequent to successful item performance. Results of this study suggest that this selection algorithm is congruent with examinee selected item difficulty. A table and a graph present study data.

ED301601#

The Future of Testing. Buros-Nebraska Symposium on Measurement and Testing (2nd, Lincoln, Nebraska, October 1984). Volume 2.

Plake, Barbara S., Ed.; Witt, Joseph C., Ed.

1986, 305p. For related documents, see ED 301 602-603.

AVAILABLE FROM: Lawrence Erlbaum Associates, Inc., 365 Broadway, Hillsdale, NJ 07642 ($39.95).

DOCUMENT NOT AVAILABLE FROM EDRS.

DOCUMENT TYPE: Conference Proceedings (021); Evaluative Report (142); Book (010)

MAJOR DESCRIPTORS: *Measurement Techniques; *Psychometrics; *Testing

An introduction by Barbara S. Plake and Joseph C. Witt defines the task of this book as presenting nine conference papers discussing probable directions for the field of measurement and testing. In an effort to contribute to the improvement of test construction and test usage, areas of present concern and potentially important areas for the future are discussed. Under the heading "Theoretical and Methodological Directions" are: (1) "Testing Old, Testing New: Schoolboy Psychology and the Allocation of Intellectual Resources" (Gene V. Glass); and (2) "Computer Technology in Testing" (Gale H. Roid). Under "Educational and Academic/Professional Directions" are: (3) "Future Directions for Educational Achievement and Ability Testing" (Nancy S. Cole); (4) "Minimum Competency Testing: Status and Potential" (Ronald A. Berk); and (5) "The Future of Testing for Licensure and Certification Examinations" (Michael T. Kane). Under "Clinical, Counseling, and Organizational Directions" are: (6) "The Future of Clinical Assessment" (Jay Ziskin); (7) "Perspectives on the Future of Neuropsychological Assessment" (Raymond S. Dean); (8) "New Directions for Interest Testing" (John L. Holland); and (9) "Needed Directions for Measurement in Work Settings" (Mary L. Tenopyr).

ED298169

Scrambled Order—Scrambled Brains: The Effects of Presenting Test Items in Sequential Versus Random Order.

Sander, Angelle M.; And Others

Apr 1988, 7p. Paper presented at the Annual Meeting of the Southwestern Psychological Association (Tulsa, OK, April 21-23, 1988).

EDRS PRICE -- MF01/PC01 plus postage.

DOCUMENT TYPE: Conference Paper (150); Research Report (143)

MAJOR DESCRIPTORS: *Item Banks; *Multiple Choice Tests; *Test Format

MAJOR IDENTIFIERS: *Item Position (Tests)

The effects of presenting test items in random order or in a sequence parallel to the order of presentation were studied by testing 92 undergraduates in an introductory psychology course at Emporia State University (Kansas). Two test forms, sequential (S) and random (R), of multiple-choice questions were prepared for four 1-hour examinations administered to three sections of classes using the same text. The students were randomly assigned to receive the four examinations according to the following orders: SRRS, SSRR, SRSR, RRSS, RSSR, and RSRS. A two-factor, split-plot analysis of variance was used to analyze the scores obtained. There was no instance in which a sequential test resulted in a higher score than a random test. It appears that instructors can use the random-order option offered by current test bank software with confidence that this will not have a negative impact on student performance.

ED306294

Indices of Individuals' Sensitivities To Computerized Test Administration and Repeated Testing.

Schuldberg, David

5 Oct 1988, 32p. Sponsored by grants from Montanans on a New Track for Science (MONTS) and the University of Montana Office of Research Administration.

EDRS PRICE -- MF01/PC02 plus postage.

DOCUMENT TYPE: Conference Paper (150); Research Report (143)

MAJOR DESCRIPTORS: *Computer Assisted Testing; *Individual Differences; *Objective Tests; *Test Format

MAJOR IDENTIFIERS: *Minnesota Multiphasic Personality Inventory; *Testing Effects

Indices were constructed to measure individual differences in the effects of the automated testing format and repeated testing on Minnesota Multiphasic Personality Inventory (MMPI) responses. Two types of instability measures were studied within a data set from the responses of 150 undergraduate students who took a computer-administered and pencil-and-paper MMPI a week apart. Two subject groups included 42 males and 33 females each. One set of indices measured systematic format- and time-related changes in responding, shifting attributable to format or time alone. Two families of six indices each were computed measuring unsystematic changes in responding, or overall tendencies to shift in a particular direction among the responses "true," "false," and "cannot say." These unsystematic changes were assessed both between formats and across times, although they were partially confounded in the present study. Systematic format shifting was related to a more general and unsystematic tendency to shift between "true" and "false" responses. The use of "cannot say" in the computerized testing situation appears distinct from the tendency to use the "cannot say" response on the pencil-and-paper test. Systematic item shifting attributable to time, although not involving an internally consistent set of responses, is distinct from other instability indices derived in this study and is therefore sensitive to the design of the administration software. Personality and other correlates of the item-shifting indices are discussed. Five tables present study data.

ED307325

Practical Applications of Student Response Analysis.

Switzer, Deborah M.; Connell, Michael L.

Mar 1989, 27p. Paper presented at the Annual Meeting of the National Council on Measurement in Education (San Francisco, CA, March 28-30, 1989).

EDRS PRICE -- MF01/PC02 plus postage.

DOCUMENT TYPE: Research Report (143); Conference Paper (150)

MAJOR DESCRIPTORS: *Academic Achievement; *Computer Assisted Testing; *Item Analysis; *Microcomputers; *Test Interpretation

MAJOR IDENTIFIERS: *Student Problem Package; *Test Analysis Package

This paper describes teacher usage of the microcomputer programs Test Analysis Package (TAP) and Student Problem Package (SPP) to analyze students' test item responses. These methods of organizing, analyzing, and reporting test results have proven useful to classroom teachers. The TAP consists of four integrated microcomputer programs to edit, score, summarize, and analyze student test data at either the item or objective level. The SPP is a program for analyzing student responses on tests based on the Student-Problem Curve Theory developed by T. Sato. Standard reports include student summaries, item summaries, and test summaries. Information available for item analysis includes item ranking in order of difficulty, frequency distributions by quintiles, point-biserial correlations between response options and total test score, and modified caution indices for items (a measure of the irregularity of the responses to the items). The reports also include information useful for analysis of student achievement, including individual student percent correct data, student ranking within the classroom, and objective mastery data. Much of this information is organized into a Student-Problem Chart—a useful, easy to use summary chart of student responses. Illustrations and examples of these reports and their use by classroom teachers are appended.

ED307527

Counseling Software Guide: A Resource for the Guidance and Human Development Professions.

Walz, Garry R.; Bleuer, Jeanne C.

American Association for Counseling and Development, Alexandria, VA.

1989, 482p.
REPORT NO.: ISBN-0-55620-058-7
AVAILABLE FROM: ERIC/CAPS, University of Michigan, School of Education, Room 2108, Ann Arbor, MI 48109; or American Association for Counseling and Development, 5999 Stevenson Avenue, Alexandria, VA 22304 ($47.00 for AACD members; $52.00 for non-members).
EDRS PRICE -- MF02 plus postage. PC not available from EDRS.
DOCUMENT TYPE: Classroom Material (050); Book-Product Review (072)
MAJOR DESCRIPTORS: *Academic Advising; *Administration; *Career Counseling; *Computer Assisted Testing; *Computer Software; *Counseling
MAJOR IDENTIFIERS: *Computer Assisted Counseling

This document is a guide to counseling software. It presents overviews on the state of development of counseling and human services software in five major topic areas including personal counseling, career counseling, academic advising, testing and administration. It provides factual and up-to-date descriptions of over 500 counseling-relevant software programs as well as 93 software reviews. It illustrates how far the field has come in the use of computers in counseling and what paths and options the future holds. Strategies on how to use the guide are presented which describe how to find out about the use of computers in counseling, what to look for in software, an overview of trends and developments in the availability and use of software, an overview of the range of software programs available, and information on specific software programs. The first section discusses trends and developments in counseling software. The second section provides software descriptions in the areas of personal counseling, career counseling, academic advising, testing, and administration. The third section provides software reviews in the same areas.

Trends

ED302180

New Visions of Reality: Multimedia and Education.

Ambron, Sueann

Jun 1986, 10p. Paper presented at an Invitational Conference on Multimedia in Education (Cupertino, CA, June 19-20, 1986). In: *Learning Tomorrow: Journal of the Apple Education Advisory Council*, n3 p5-13 Spr 1987. For the complete journal, see ED 302 179.
EDRS PRICE -- MF01/PC01 plus postage.
DOCUMENT TYPE: Journal Article (080); Conference Paper (150)
MAJOR DESCRIPTORS: *Audiovisual Aids; *Computer Graphics; *Educational Change; *Educational Quality; *Multimedia Instruction; *Videodisks

Multimedia is a powerful tool that will change both the way we look at knowledge and our vision of reality, as well as our educational system and the business world. Multimedia as used here refers to the innovation of mixing text, audio, and video through the use of a computer. Not only will there be new products emerging from multimedia uses, but multimedia may also change the way we think and solve problems—just as in recent years, word processing, spreadsheets, and databases have changed how we think about writing, accounting, and information access. Multimedia will affect education by providing instructors, students, and others with a dramatic new environment for presentations—i.e., they will no longer be bound by the limits of illustrating processes on chalkboards or in slide presentations. Multimedia holds great promise for improving the quality of education by providing the ability to illustrate ideas with visual, audio, text, or any combination of media so that users can create new ways of communicating ideas. Teachers will be freed from the constraints of textbooks and chalkboards, and students who have difficulty expressing ideas in writing can now have a new way to communicate and a new class of material to learn from. Multimedia allows the user to be an active learner, controlling access to and manipulating vast quantities of information with a computer.

ED298883

Technology: Developing Our Newest and Greatest Resource.

Senese, Donald J.

19 Apr 1984, 16p. Paper presented at the National Conference on Technology and Education (Fort Worth, TX, April 19, 1984).
EDRS PRICE -- MF01/PC01 plus postage.
DOCUMENT TYPE: Position Paper (120); Project Description (141); Conference Paper (150)
MAJOR DESCRIPTORS: *Educational Improvement; *Educational Technology; *Futures (of

Society); *Government Role; *Microcomputers; *Research Projects

Pointing out the dilemmas facing educators today in preparing people for the future, this paper discusses the supply and demand nature of the job market and the growing need for better educational opportunities, and describes opportunities provided by the concept of the newly founded Electronic University. The importance of research is emphasized, and activities sponsored by the Office of Educational Research and Improvement (OERI) which contribute to research are described. These activities include the sponsoring of a conference on computer research needs in basic skills in November 1982 and the awarding of a grant for the Center for Technology, which will focus on research; establishing the National Diffusion Network (NDN) to identify and designate schools using technology successfully as "lighthouse schools," disseminate knowledge of successful technological programs, and assist other schools in implementing such programs, which currently include programs in occupational training for secondary students, records management, and improving mathematics and reading skills; the awarding of grants for 12 school-based technology demonstration sites to facilitate sharing of programs with other school districts, including training programs such as Projects BEST, SLATE, and VIM and programs for teaching physics, chemistry, writing, mathematics problem solving skills, writing skills, and computer literacy; using educational television through such programs as the "Voyage of the Mimi" and "3-2-1 Contact"; and monitoring contracts to use technology to improve teaching of basic skills in mathematics, science, and writing, including project Quill, which uses the microcomputer to help teachers teach writing to third- through sixth-grade students.

ED300651

The Technologies of the Third Era of the U.S. Workforce. Report to the National Academy of Science's Panel on Technology and Employment (Washington, D.C., August 1986).

Swyt, Dennis A.

Aug 1986, 77p.

EDRS PRICE -- MF01/PC04 plus postage.

DOCUMENT TYPE: Research Report (143)

MAJOR DESCRIPTORS: *Computer Oriented Programs; *Futures (of Society); *Information Technology; *Labor Force Development; Robotics; *Technological Advancement; *Work Environment

This paper describes the new technologies most likely to affect the number and types of jobs in the U.S. economy over the next two decades. These work-affecting technologies are presented in the context of the continuing evolution of the U.S. work force into a distinctly new, third era. Chapter I discusses the transformation of the United States from an agrarian nation into an industrial one and the equally momentous transformation from an industrial nation into one variously described as a post-industrial, service, Third Wave, or knowledge-intensive economy. Chapter II describes the emerging technologies that both underlie the transition and promise to give the third era its distinct technological character. Focus of the chapter is on the information technologies, which are the most significant for the immediate future of work and employment in the emerging era and which include the devices, machines, and systems that generate, transmit, manipulate, and are controlled by means of the binary-represented data upon which computers operate. Sections of the chapter look at the information technologies from three perspectives: the computer itself as the paradigm of the information technologies, advanced research and development in computer-based technologies, and specific applications in the workplace. Appendixes include the diamond plot of occupation trends, Toffler's Third-Wave thesis, and lists of references and data sources.

ED302212

Visions of the Future: Considerations for Shaping Educational Networking.

Vaughan, Larry

Nov 1986, 10p. In: *Learning Tomorrow. Journal of the Apple Education Advisory Council*, n4 p299-308 Win 1988. For the complete journal, see ED 302 197.

EDRS PRICE -- MF01/PC01 plus postage.

DOCUMENT TYPE: Conference Paper (150); Journal Article (080)

MAJOR DESCRIPTORS: *Computer Networks; *Design Requirements; *Educational Technology; *Futures (of Society); *Man Machine Systems

This paper summarizes the general issues discussed at the September 1986 conference of the Apple Education Advisory Council and during the Advisory Council's deliberations about the

future. The general issues are categorized within four topics—technical considerations, people considerations, human/technology interface considerations, and network utilization—and specific suggestions are made for each of the topics. In general, it is argued that educators and administrators should be planning how to network people rather than technologies. Risks must be taken, it is suggested, and new projects must be developed and evaluated so that lessons learned can be brought forward into the design of future systems. Finally, it is argued that future-oriented models of networking must be process models so that future systems can be redesigned readily as they are being built.

Subject Applications

Business

ED302193

Stand By for Fun: Experience and Interaction.

Crockford, Douglas

Jun 1986, 9p. Paper presented at an Invitational Conference on Multimedia in Education (Cupertino, CA, June 19-20, 1986). In: *Learning Tomorrow: Journal of the Apple Education Advisory Council*, n3 p293-301 Spr 1987. For the complete journal, see ED 302 179.

EDRS PRICE -- MF01/PC01 plus postage.

DOCUMENT TYPE: Journal Article (080); Conference Paper (150)

MAJOR DESCRIPTORS: *Design Requirements; *Interactive Video; *Man Machine Systems; *Marketing; *Technological Advancement; *Video Games

This paper explores interactivity, and considers what should be done to create a mass market for interactive media. It is suggested that one way to do so is to examine the video game phenomenon, and a model of interactivity is proposed. The model, a "home interactive theater," would involve interaction in the telling of a story, with the interactor given some room for self-expression in the context of interesting events, although no control over changing the end of the story. It is suggested that, in this context, interaction should have more to do with taking part than with making decisions.

ED308826

Secondary Computer-Based Instruction in Microeconomics: Cognitive and Affective Issues.

Lasnik, Vincent E.

Feb 1989, 17p. In: *Proceedings of Selected Research Papers Presented at the Annual Meeting of the Association for Educational Communications and Technology (Dallas, TX, February 1-5, 1989)*. For the complete proceedings, see ED 308 805.

EDRS PRICE -- MF01/PC01 plus postage.

DOCUMENT TYPE: Research Report (143); Conference Paper (150)

MAJOR DESCRIPTORS: *Cognitive Style; *Computer Assisted Instruction; *Economics Education; *Individual Differences; *Intermode Differences; *Student Attitudes

MAJOR IDENTIFIERS: *Computer Anxiety

This paper describes the general rationale, hypotheses, methodology, findings and implications of a recent dissertation research project conducted in the Columbus, Ohio, public schools. The computer-based study investigated the simultaneous relationship between achievement in microeconomics and attitude toward economics, level of computer anxiety, and attitude toward learning. Twelfth-grade students (n=155) in regular social science courses at four Columbus senior high schools were randomly assigned to alternative instructional treatments. Each treatment, emphasizing either a problem-oriented strategy or a rule-oriented strategy, consisted of a week-long computer-based unit teaching fundamental economic concepts and principles of supply, demand, and equilibrium. Pre-, post-, and delayed-post measures were given, and appropriate data analyses completed. Results of these analyses indicate that individuals receiving problem-oriented instruction performed at a higher level on all of the cognitive achievement scales, although this difference was significant only for questions on the lower-order subscale of Posttest I. There is also evidence that a problem-oriented strategy may positively influence attitudes towards economics, as well as the degree of sophistication towards economic issues generally. (32 references)

ED298781

Theodore Roosevelt High School Project TEACH, 1986-1987. OEA Evaluation Report.

Martinez, Ana L.

New York City Board of Education, Brooklyn. Office of Educational Assessment.

[1988], 48p.; Prepared by the Bilingual Education Evaluation Unit.

SPONSORING AGENCY: Department of Education, Washington, DC.

EDRS PRICE -- MF01/PC02 plus postage.

DOCUMENT TYPE: Evaluative Report (142)

MAJOR DESCRIPTORS: *Bilingual Education Programs; *Business Education; *Computer Oriented Programs; *Counseling Services; *Program Effectiveness
MAJOR IDENTIFIERS: *Project TEACH NY

Project TEACH (Technological Enrichment and Achievement for Cambodians and Hispanics), administered by Theodore Roosevelt High School's foreign languages and bilingual education department, was designed to provide newly arrived students with bilingual instruction in computer technology and business. In its third year, the program served 275 limited-English-speaking students from the Caribbean, Central America, and Cambodia in grade nine through eleven. The project offered a wide range of courses, including English as a second language (ESL), Spanish, bilingual content-area instruction, computer technology, and business. Computer use for academic preparation increased during the project. Lack of a Khmer-speaking teacher made individualized content-area instruction for Cambodians infeasible; however, Khmer-speaking paraprofessionals assisted students in courses taught in English. Academic, career, and personal counseling, staff development, and parental involvement were included in the program. Analysis of student achievement data indicates: (1) students met program objectives in ESL; (2) Spanish language program objectives were met; (3) course passing rate objectives were met for computer and keyboarding courses, but not for mathematics; and (4) the attendance rate for participants was higher than for mainstream students.

ED304587

Welcome to Lotus 1-2-3. Learning Activity Packets.

Mills, Steven; And Others

Oklahoma State Department of Vocational and Technical Education, Stillwater. Curriculum and Instructional Materials Center.

1989, 207p. For a related document, see ED 304 588.

AVAILABLE FROM: Curriculum and Instructional Materials Center, Oklahoma Department of Vocational and Technical Education, 1500 West Seventh Avenue, Stillwater, OK 74074-4364 (Order No. BO-3022).
EDRS PRICE -- MF01/PC09 plus postage.
DOCUMENT TYPE: Instructional Material (051); Test, Questionnaire (160)
MAJOR DESCRIPTORS: *Business Administration; *Business Education; *Computer Software; *Individualized Instruction; *Management Systems; *Money Management
MAJOR IDENTIFIERS: *Lotus 1 2 3; *Spreadsheets

This learning activity packet (LAP) contains 11 self-paced study lessons that allow students to proceed along a 36-hour course of study for Lotus 1-2-3 at their own pace. The lessons are organized in the following way: objectives, completion and performance standards, a list of required materials, unit test, and exercises (applications of the operations to measure the laboratory competency of the student in regard to the materials presented in the LAP). Most lessons are presented in a "read and do" format. The lessons are: getting started with Lotus 1-2-3; moving around the worksheet; typing cell entries; using 1-2-3 commands; indicating cell ranges; building a simple worksheet; building a simple database; building a simple graph; writing formulas; 1-2-3 functions; and formatting a worksheet. Supplemental worksheet exercises, unit tests for each lesson, and answer keys for the tests and all exercises are appended. These lessons have been prepared for use with the IBM Personal Computer.

ED297147

Guidelines for the Development of a Microcomputer Curriculum.

Washington Office of the State Superintendent of Public Instruction, Olympia. Division of Vocational-Technical and Adult Education Services.

Feb 1986; 64p.

EDRS PRICE -- MF01/PC03 plus postage.
DOCUMENT TYPE: Teaching Guide (052)
MAJOR DESCRIPTORS: *Business Education; *Computer Uses in Education; *Courseware; *Curriculum Development; *Microcomputers; *Office Automation

This document is designed to provide assistance to people in school districts who are responsible for making decisions regarding the purchase and use of microcomputers in business and office education programs. A section on planning considerations outlines considerations that need to be addressed, available resources, and maximizing the use of hardware and software. The following topics are considered in the section on teacher training considerations: necessary computer knowledge, where instructors can receive training, training that teacher training institutions and local districts should provide, and instructor responsibility for keeping current. The next section outlines these curriculum considerations: what students can learn to use, competencies students need, content that should be replaced by these competencies, and steps to ensure that the curriculum is not duplicated. The last two sections highlight hardware considerations (hardware selection, networks, computers in a lab setting, ergonomics, security, and maintenance) and software considerations (primary software applications, software selection, and copyright laws). A listing of 109 current references is also provided. Appendixes include sample forms, such as a planning packet for new vocational programs and hardware and software evaluation forms. A listing of suggested periodicals is appended.

English as a Second Language and Foreign Languages

ED308697

Video: The Foreign Language Textbook of the Future.

Ballinger, Robert L.; Ballinger, Virginia S.

16 Apr 1989, 9p. Paper presented at the Annual Meeting of the Central States Conference on the Teaching of Foreign Languages (21st, Nashville, TN, April 13-15, 1989).

EDRS PRICE -- MF01/PC01 plus postage.

DOCUMENT TYPE: Position Paper (120); Evaluative Report (142); Conference Paper (150)

MAJOR DESCRIPTORS: *Audiovisual Aids; *Curriculum Enrichment; *Second Language Instruction; *Videotape Recordings

MAJOR IDENTIFIERS: *Empowerment

The role of video as a foreign language textbook of the future is discussed. The flexibility of the video format accommodates a wide variety of learning style characteristics. It is maintained that the ideal textbook: (1) empowers the teacher by matching the teacher's objectives, by being under the teacher's control, by condensing time, by breaking through the limitations of the classroom, and by freezing the linguistic event under study); and (2) enhances the learnability of the lesson by stimulating the visual sense, by linking auditory information to visual images, by allowing students to respond to the material, and by letting students review the material at their own pace). Video is a technology that takes into account the individual differences of foreign language learners by attending to their visual and auditory perceptual strengths. Video also allows foreign language teachers to manipulate learning situations in the target language and setting because they can preview the event and prepare learning activities ahead of time.

ED301838

Computer-Assisted Metacognitive Strategies and the Reading Comprehension Skills of ESL Elementary School Students.

Carrasquillo, Angela; Nunez, Dulcinea

[1988], 20p.

EDRS PRICE -- MF01/PC01 plus postage.

DOCUMENT TYPE: Research Report (143)

MAJOR DESCRIPTORS: *Computer Assisted Instruction; *Metacognition; *Reading Comprehension; *Reading Skills

With the advent of the computer as an instructional tool many curriculum specialists have been designing software for reading instruction. However, most of the software designed to help develop reading comprehension skills does not consider the inclusion of monitoring comprehension strategies, therefore limiting the instructional potential of the new technology as well as the availability of alternate teaching mediums and materials for English as a Second Language (ESL) reading instruction. To investigate the effectiveness of two computer-assisted metacognitive strategies on the development of sequential reading skills of ESL fourth grade students, 68 randomly selected Spanish-speaking students from a public school in a low socioeconomic setting in Puerto Rico were classified in combined language proficiency and reading ability levels and were randomly assigned to one of two treatments. Both treatment conditions used computer-mediated texts as the instructional materials. The Tutorial-Direct Monitoring Strategy (TDMS) consisted of A. S. Palincsar and A. L. Brown's three-step monitoring technique, skill modeling reading texts, and comprehension exercises, whereas the Schema-Direct Monitoring Strategy (SDMS) used reading texts, comprehension exercises, and a monitoring strategy in flowchart form. The results of the study demonstrated significant differences in favor of the TDMS. Findings appear to confirm the literature that suggests that training in metacognitive strategies can enhance reading comprehension performance as well as reading comprehension skills. (Two tables of data are included, and 23 references are appended.)

ED302095

Integrating CALL Software into ESL Curricula: An Exploration.

Cheung, Anthony C. M.

Aug 1987, 14p. Paper presented at the Annual Meeting of the International Association of Applied Linguistics (Sydney, New South Wales, Australia, August 16-21, 1987).

EDRS PRICE -- MF01/PC01 plus postage.

DOCUMENT TYPE: Review Literature (070); Evaluative Report (142); Conference Paper (150)

MAJOR DESCRIPTORS: *Computer Assisted Instruction; *Courseware; *Curriculum Development; *English (Second Language)

The use of computer-assisted-language-learning (CALL) software in the curriculum for teaching English as a second language (ESL) is discussed. Selected CALL programs are described, and some general concerns about the application of CALL software are outlined, including the limited oral applications, inappropriate content or design, and the "non-communicative" orientation of many programs. Two recent experiments exploring the integration of CALL software into regular ESL curricula are described. One experiment involved a class of 16 ESL students in the use of a multiple-choice authoring program, and the other had a group of ESL teachers in an in-service program use a reading program. Results suggest that many students find CALL interesting and exciting, and that the software is adaptable to language course themes and units. The approach is also seen to change the teacher's role from that of information-provider to that of organizer and tutor. A brief bibliography and sample data files from the experiments are appended.

ED299813

You Can Take It with You: Helping Students Maintain Foreign Language Skills beyond the Classroom. Language in Education: Theory and Practice 71.

Gleason, Jean Berko, Ed.

Center for Applied Linguistics, Washington, D.C.; ERIC Clearinghouse on Languages and Linguistics, Washington, D.C.

1988, 142p. Published by Prentice Hall, Inc., Englewood Cliffs, New Jersey.

SPONSORING AGENCY: Office of Educational Research and Improvement (ED), Washington, DC.

EDRS PRICE -- MF01/PC06 plus postage.

DOCUMENT TYPE: ERIC Product (071); Review Literature (070)

MAJOR DESCRIPTORS: *Computer Assisted Instruction; *Independent Study; *Language Maintenance; *Language Skills; *Learning Strategies; *Second Languages

A discussion of the loss and maintenance of second language skills beyond the formal education process provides information about skill loss and a variety of strategies and suggestions for language skill maintenance. The book begins with an overview of the subject of language loss and maintenance (Jean Berko Gleason and Barbara Alexander Pan), discussing personal factors that seem to make a difference in language study, cultural influences, and the relationship between the kind of language instruction received and the likelihood of losing the language. Subsequent chapters focus on different efforts to help prevent the loss of a foreign language. These include personal learning strategies (Rebecca Oxford and David Crookall), self-instructional resources such as cassettes and other learning resources (John Means), the use of computers to maintain language skills (Frank Otto), study and travel abroad (Helene Zimmer-Loew), and the community as a cultural learning resource (Frederick L. Jenks). References, additional resources, and useful addresses are included.

ED299831

A Guide to Courseware Authoring Options in ESL/FL Instruction.

Hampson, S. L.

1988, 63p.

AVAILABLE FROM: Athelstan Publications, P.O. Box 8025, La Jolla, CA 92038-8025 ($4.75).

EDRS PRICE -- MF01 plus postage. PC not available from EDRS.

DOCUMENT TYPE: Directory (132); Project Description (141)

MAJOR DESCRIPTORS: *Authoring Aids (Programing); *Computer Assisted Instruction; *Courseware; *English (Second Language)

A guide to courseware authoring aids for computer-assisted language instruction (CALIS) gives suggestions for the selection and use of programing options and provides an annotated listing of those options. Introductory sections discuss the use of computer-assisted language teaching, the selection of quality courseware, the types of authoring aids available, and the elements of authored instruction. The latter sections provide detailed, step-by-step instructions for creating an instructional unit with the CALIS author program. A product registry follows, with each entry including the vendor's name, address, and telephone number, the program title, price, a description of the program's features, computer system requirements, and the program's capability to accommodate foreign languages. Software directories and projects are also listed, the programs are indexed by languages and fonts, and a bibliography is provided.

ED303286

San Elizario Bilingual Learning Community: An Application of Technology to Reading/Writing/Mathematics/Computer Literacy. Fourth Year Evaluation Report.

Maltby, Gregory P.; And Others

New Mexico State University, Las Cruces.

10 Aug 1988, 209p.

EDRS PRICE -- MF01/PC09 plus postage.

DOCUMENT TYPE: Evaluative Report (142); Test, Questionnaire (160)

MAJOR DESCRIPTORS: *Academic Achievement; *Achievement Gains; *Computer Assisted Instruction; *English (Second Language); *Limited English Speaking; *Mexican American Education; *Second Language Instruction

San Elizario, Texas, is a border community with a high poverty rate, overcrowded school conditions, and a 60% limited English proficiency (LEP) rate among school students. In 1984, the school district began a cooperative university and school system project to improve Hispanic LEP students' achievement through applied computer technology. In 1987-88, the project provided computer assisted instruction in mathematics, language arts, and computer literacy to 119 students in grades 1-6 and 9-12, plus science and social science to older participants. A comparison of October 1987 and April 1988 standardized test scores showed improvement for most grade levels. The greatest reduction in the gap between participant scores and national norms occurred at grade 11 for composite scores (29%), reading (48%), and language arts (25%), and at grade 6 for mathematics (81%). Questionnaires completed by school administrators and project staff indicated that, compared to their counterparts, project students had lower absentee, dropout, and retention rates, were less in need of specialized services, and were more likely to pursue postsecondary education. Classroom observers found capable teachers providing up to date instruction in appropriate environments, eager and well behaved students, and good rapport between project staff and other school staff. But observers also noted project weaknesses in the infrequent use of native language and home culture materials during instruction. Extensive appendices include questionnaires and observer surveys used; curriculum outlines; software, hardware, and computer book inventories; and standardized test scores and statistics. This report contains 15 references.

ED299817

Using Computer Concepts as Problem-Solving Tools in the Language Classroom. From a Curriculum Guide Prepared by Georgia State University Department of Early Childhood Education. Program Information Guide Series Number 5.

Pierce, Lorraine Valdez, Comp.

National Clearinghouse for Bilingual Education, Wheaton, MD.

Aug 1988, 27p.

AVAILABLE FROM: National Clearinghouse for Bilingual Education, 8737 Colesville Rd., Silver Spring, MD 20910.

EDRS PRICE -- MF01/PC02 plus postage.

DOCUMENT TYPE: Teaching Guide (052)

MAJOR DESCRIPTORS: *Computer Literacy; *English (Second Language); *Limited English Speaking; *Mathematics Instruction; *Second Language Instruction

MAJOR IDENTIFIERS: *Content Area Teaching

The guide provides teachers of limited-English-proficient students in grades 4-6 with a communicative teaching unit integrating language, math, and computer skills. A model for integrating other content areas with English as a second language contains nine classroom activities, beginning with games that introduce and reinforce math vocabulary and problem-solving strategies and ending with hands-on practice at the computer. Lessons progress gradually from a review of math concepts to classification and categorization of number sets, organizing data to form a database, using the database to organize and manipulate specific lists of numbers, application of the database to problem-solving, and designing and searching a database. In all activities, the teacher introduces the concepts to the whole class and then reinforces and extends them in small groups, in a learning center, and in homework assignments.

Specific objectives for each activity are listed. Each activity includes recommendations for grouping and teacher role, a list of materials needed, detailed procedures, suggestions for evaluation, and possible extensions of the activity. Two glossaries, one of mathematical terms and one of database terms, are appended. Suggested references and classroom resources are also noted.

ED299835

Films and Videotapes in the ESL/EFL Classroom.

Stoller, Fredericka

Mar 1988, 25p. Paper presented at the Annual Meeting of the Teachers of English to Speakers of Other Languages (22nd, Chicago, IL, March 8-13, 1988).

EDRS PRICE -- MF01/PC01 plus postage.

DOCUMENT TYPE: Teaching Guide (052); Conference Paper

MAJOR DESCRIPTORS: *English (Second Language); *Films; *Media Selection; *Videotape Recordings

MAJOR IDENTIFIERS: *Content Area Teaching

Commercially produced films and videotapes are recommended as effective tools for developing speaking, listening, and writing skills in English as a second language. It is suggested that their use with content-area instruction, where films and videotapes provide relevant schema background, makes language relevant and comprehensible. Practical aspects of classroom instruction are discussed, focusing on the adaptation of pre-viewing, viewing, and post-viewing activities to the selected film or tape, student needs, and instructional objectives. It is concluded that careful film or video selection, purposeful lesson planning, and the integration of pre-viewing, viewing, and post-viewing activities into the content-based lesson encourage natural language use and language skill development.

ED301049

The Computer and Language Learning: Productivity Tools in the Classroom.

Thrush, Emily A.

Mar 1988, 27p. Paper presented at the Annual Meeting of the Teachers of English to Speakers of Other Languages (22nd, Chicago, IL, March 8-13, 1988).

EDRS PRICE -- MF01/PC02 plus postage.

DOCUMENT TYPE: Review Literature (070); Evaluative Report (142); Conference Paper (150)

MAJOR DESCRIPTORS: *Computer Assisted Instruction; *Courseware; *English (Second Language); *Media Selection

Early programs for computer-assisted language learning were limited in size and power by the capabilities of the first generation of microcomputers. As these capabilities have increased, it has become possible for language teachers to take advantage of tools originally intended for use in the business world, such as word processors, spreadsheets, databases, text analyzers, and telecommunications. The advantages of these packages over small, discrete drill and practice or game programs include unlimited flexibility of content, greater student involvement with the content material, and higher degree of relevance to students' life goals. With the application of several principles of good language teaching, as revealed in research, productivity tools such as these can be used in class activities at all grade levels and for all degrees of language skill.

Fine Arts

ED302497

Microcomputers in Art Eduction: An Introductory Vocabulary for Art Teachers Who Need To Make Sense of the New Technology.

Brouch, Ginny

National Art Education Association, Reston, Va.

1988, 49p.

AVAILABLE FROM: National Art Education Association, 1916 Association Drive, Reston, VA 22091.

EDRS PRICE -- MF01 plus postage. PC not available from EDRS.

DOCUMENT TYPE: Non-Classroom Material (055)

MAJOR DESCRIPTORS: *Art Education; *Basic Vocabulary; *Microcomputers

This booklet provides introductory information and terminology for art teachers concerning the use of microcomputers in elementary and secondary school art classes. Part 1 describes the sizes and uses of microcomputers and distinguishes between maxi, mini, micro, lap, and handheld computers. Part 2 discusses: (1) basic microcomputer hardware and peripheral equipment, such as keyboards, monitors, disk drives, printers, plotters, and modems; and (2) how to create images through use of a mouse, touchpads and graphics' tablets, joysticks, paddles, lite pens, scanners, clip art, and voice activation and how to retrieve various images from the computer. Part 3 explains basic procedures for classroom care of microcomputers and describes floppy disks, while part 4 discusses microcomputer art software packages for specific elementary and secondary grade levels and provides purchasing information. Part 5 suggests microcomputer training possibilities for art teachers.

ED305913

Ideas for Integrating the Microcomputer into Visual Arts Instruction.

Pollard, Jim, Ed.; Barnhart, Dick, Ed.

Northwest Regional Educational Lab., Portland, OR.

Nov 1988, 26p. For a related document, see ED 289 699.

SPONSORING AGENCY: Office of Educational Research and Improvement (ED), Washington, DC.

EDRS PRICE -- MF01/PC02 plus postage.

DOCUMENT TYPE: Teaching Guide (052); Project Description (141)

MAJOR DESCRIPTORS: *Learning Activities; *Learning Processes; *Microcomputers; *Theater Arts; *Visual Arts

This paper provides 18 lesson plans that use educational technology for instruction in the visual and performing arts in secondary schools; these lesson plans were developed as part of a workshop held in the State of Washington in May 1988. The lesson plans were developed to follow the format of State of Washington Superintendent of Public Instruction Guidelines. Each lesson comprises activities that address the following five learning process components for the visual and performing arts: (1) perceiving (to attain an awareness of the arts through the senses); (2) experiencing (to have personal involvement with the arts through participation); (3) understanding (to comprehend and interpret the elements of art forms and other relationships); (4) creating (to develop personal statements through problem solving in the arts); and (5) aesthetic valuing (to make evaluations, choices, and judgements about the arts based on personal criteria). Each lesson plan contains goals, objectives, activities, lessons, and an explanation of how each component is addressed in that lesson. A list of workshop participants and a list of producers of the software cited are provided.

ED298032

A Special Needs Music Community: Color and the Computer.

Upitis, Rena

8 Apr 1988, 16p. Paper presented at the Annual Meeting of the American Educational Research Association (New Orleans, LA, April 5-9, 1988).

SPONSORING AGENCY: Ontario Department of Education, Toronto.

EDRS PRICE -- MF01 plus postage.

DOCUMENT TYPE: Conference Paper (150); Research Report (143)

MAJOR DESCRIPTORS:

*Computer Uses in Education; *Exceptional Child Research; *Music; *Severe Disabilities

MAJOR IDENTIFIERS: *IPAINT; *Ontario

The daily use of music in a Kingston, Ontario, Canada, special needs classroom motivates severely neurologically and mentally handicapped students and encourages their communication skills. In a special project, handicapped students use tape recorders with special switches to indicate to nonhandicapped elementary students what music appeals to them. With IPAINT, a computer program, the nonhandicapped students then create a visual pattern of colors to illustrate the music composed by the handicapped students. IPAINT notations increase student ability to understand music and deviate from standard musical notations in the following ways: (1) the music's texture is depicted by color; (2) the visual forms correlated with sound allow the music to be more easily "heard"; (3) interpretation of the notations can vary to create new compositions; and (4) IPAINT musical notations are accessible to all students. In the future, special touch sensitive switches will be attached to the computer and adapted music software provided so that handicapped students can create their own compositions.

Language Arts

ED298937

Recent Trends in Minicomputer-Based Integrated Learning Systems for Reading and Language Arts Instruction.

Balajthy, Ernest

Mar 1988, 27p. Paper presented at the Rutgers University Spring Reading Conference (New Brunswick, NJ, March 1988).

EDRS PRICE -- MF01/PC02 plus postage.

DOCUMENT TYPE: Book-Product Review (072); Project Description (141); Conference Paper (150)

MAJOR DESCRIPTORS: *Computer Assisted Instruction; *Courseware; *Language Arts; *Minicomputers ; *Reading Instruction

MAJOR IDENTIFIERS: *Integrated Learning Systems

This paper discusses minicomputer-based ILSs (integrated learning systems), i.e., computer-based systems of hardware and software. An example of a minicomputer-based system in a school district (a composite of several actual districts) considers hardware, staffing, scheduling, reactions, problems, and training for a subskill-oriented reading program for compensatory education students. Specific ILS software packages are then described: (1) the PLATO/WICAT System 300 for primary reading, reading comprehension, writing, language arts (with language arts skills, spelling, and sentence combining components), English as a Second Language, and other academic subjects; (2) the Computer Curriculum Corporation's MICROHOST system for mathematics, reading, language arts, and computer literacy from grade 1 through adult; (3) Houghton Mifflin's Dolphin Curriculum, which is designed to supplement teacher-directed instruction with computer-assisted instruction in reading and language arts skills; and (4) DEGEM Systems' TOAM Computer Aided Instruction System for mathematics and multiple choice drill instruction. The appendix lists publisher, former names, systems software, instructional components, and hardware configurations for each system. (8 references)

ED304089

Creative Spelling with Visual Strategies on the Microcomputer.

Moxley, Roy A.; Joyce, Bonnie

[1987], 48p.

EDRS PRICE -- MF01/PC02 plus postage.

DOCUMENT TYPE: Research Report (143)

MAJOR DESCRIPTORS: *Computer Assisted Instruction; *Learning Strategies; *Microcomputers; *Phonology; *Spelling; *Visual Learning

In a study involving creative spelling, 300 kindergarten children and one first grader used computer programs to spell words in isolation and in stories they wrote. As the children made progress toward writing words in conventional spelling, they developed phonological spelling strategies similar to those that have previously been reported for children using paper and pencils. At the same time, they also developed visual spelling strategies in more detail than previously reported. There was no delay in the development of visual strategies to justify the claim that a new visual state of spelling occurs after a phonetic stage. The development of visual, print-based spelling strategies by the children is discussed in terms of the microcomputer's potential for accelerating the acquisition of spelling skills, and includes the following observations: (1) stage theories of spelling development need to be adjusted to account for visual strategies in more detail before the transitional stage; (2) creative variations that follow a standard spelling are not simply a relapse to a transitional or phonetic stage; (3) sometimes only visual influences, but alternatively alternating and simultaneous visual and phonetic influences, appear in the development of a child's spelling; (4) the computer has exceptional capabilities for making children aware of letter relationships in spelling. A note on how to obtain the computer programs used in this study, 11 tables, and three figures are included. (27 references)

ED306548

Some Spelling Strategies of Young Children on the Microcomputer.

Moxley, Roy A.; Warash, Bobbie

1989, 29p.

EDRS PRICE -- MF01/PC02 plus postage.

DOCUMENT TYPE: Research Report (143)

MAJOR DESCRIPTORS: *Computer Uses in Education; *Spelling; *Spelling Instruction

Working with three preschool children for nine weeks, a study examined effects on children's spelling when certain ways of employing various computer features are used within the context of a language experience approach. Each Monday and Friday the children were pretested and posttested on four spelling words dictated by the researcher. After Monday's pretest, the children worked with an adult for about five minutes on one of the computer programs for presenting the words. They continued working on the same words in the same programs from Monday through Thursday and were given printouts of the pictures and words they produced. Spelling strategies included preliterate "random" sequences, immediate responses in direct copying, delayed responses in studying a word before it vanished, oral and manual rehearsal, and visual and phonological spelling strategies. These three case studies showed several examples of stronger visual influences on spellings at an earlier stage of spelling development than has been reported with paper and pencil spellings. Overall, results suggested that serious consideration should be given to having children do their spelling on the computer. (One table of data and two figures are included.)

ED306028

Visual Spelling by Young Children on the Microcomputer: A Multidirectional Development with Phonological Spelling.

Moxley, Roy A.; Joyce, Bonnie

[1987], 31p.

EDRS PRICE -- MF01/PC02 plus postage.

DOCUMENT TYPE: Research Report (143)

MAJOR DESCRIPTORS: *Computer Oriented Programs; *Computer Software; *Microcomputers; *Spelling Instruction

MAJOR IDENTIFIERS: *Spelling Growth; *Visual Spelling

Three kindergarten children and one first-grade student used computer programs to spell words in isolation and in stories they wrote. Eventually, all of the children, even those who were initially non-readers, were able to write some stories in standard spelling. As the children made progress toward writing words in conventional spelling, they showed evidence of developing phonological spelling strategies similar to those that have previously been reported for children using paper and pencil. At the same time, however, children also showed evidence of developing visual spelling strategies in more detail than has previously been reported. In particular, evidence was found of visual spelling strategies occurring before the transitional stage in which they had previously been seen. Evident patterns of spelling development were more consistent with multidirectional than with unidirectional views of written language development. Findings suggested that computer programs are a viable option for teachers who wish to develop the visual spelling strategies of young children. Children's visual classifications are discussed in detail, focusing on visual categories, analogical wholes, analogical parts, standard spelling of a significant segment, letter reversals, visual and semiphonetic categories in the same phase, visual and phonetic categories in the same phase, and sequences with visual categories.

ED306941

Instructional Software BSAP Correlations for Language Arts, Mathematics and Science, Grades 1-8.

South Carolina State Department of Education, Columbia. Office of Instructional Technology.

May 1988, 114p. For other reports on BSAP and computer software, see ED 253 887, ED 257 639, ED 265 077, ED 268 988, ED 295 592, and ED 306 942-943.

EDRS PRICE -- MF01/PC05 plus postage.

DOCUMENT TYPE: Non-Classroom Material (055); Directory (132)

MAJOR DESCRIPTORS: *Courseware; *Evaluation Criteria; *Language Arts; *Mathematics Instruction; *Minimum Competencies; *Science Instruction

MAJOR IDENTIFIERS: *Software Evaluation

This booklet serves as an advisory reference to available software programs that address specific objectives for students in grades 1-8 in all three Basic Skills Assessment Program (BSAP) curriculum areas—language arts, mathematics, and science. A description of the basic skills objectives precede each curriculum section. Information provided for each software package includes the title, Dewey Decimal classification, application and copyright, grade level, BSAP objective, computer assisted instruction mode, system requirements, producer/-vendor and price. A separate section offers information, criteria, and forms for computer software evaluation developed by Project SEED (Software Evaluation Exchange Dissemination). A list of the names and addresses of software vendors/producers is provided, and a form to evaluate the booklet is included.

Logo Programming Language

ED304134

Exploring Motion through Game MicroWorlds with LOGO: How Theory Transferred to the Classroom.

Adamson, Eadie

1988, 15p. Paper presented at the Meeting of the New York State Association for Computers and Technologies in Education (Ryebrook, NY, November 20-22, 1988).

EDRS PRICE -- MF01/PC01 plus postage.

DOCUMENT TYPE: Computer Programs (101); Project Description 141); Conference Paper (150)

MAJOR DESCRIPTORS: *Computer Games; *Discovery Learning; *Discovery Processes; *Grade 5; *Programing; *Teacher Student Relationship

MAJOR IDENTIFIERS: *LOGO Programing Language

This paper describes the use of LOGOWriter with fifth grade boys as a means of developing programming procedures for computer games that they could use to simulate motion with acceleration, as well as techniques for controlling the direction of motion. The kinds of programs developed, student responses to this work, observations about teaching issues which arose, and details about several different ways to approach the topic with a group of students are all considered. It was found that the agenda of developing reasonably accurate simulation of motion fitted neatly into projects that the students—who had several years of previous Logo experience—were already highly motivated to develop, and new ideas generated by the students permitted opportunities for student-teacher interaction. The extent to which students were, and could be, permitted to discover on their own and the extent to which teacher intervention was required is also discussed, and it is noted that two different approaches were used with different groups of students: a discovery method with students working from a target game, and the development of an individual game project by each student. The particular experiences of several individual students are also described.

ED304107

LogoWriter Games: Tips and Tools.

Adamson, Eadie

1988, 6p. Paper presented at the Great Lakes/East Coast LOGO Conference (Cleveland, OH, May 6-7, 1988).

EDRS PRICE -- MF01/PC01 plus postage.

DOCUMENT TYPE: Teaching Guide (052); Computer Programs (101); Conference Paper (150)

MAJOR DESCRIPTORS: *Class Activities; *Computer Games; *Problem Solving; *Programing

MAJOR IDENTIFIERS: *LOGO Programing Language

This paper provides guidelines and programming commands for using LogoWriter activity cards in game-writing as a way to develop student programming skills. Suggestions are made for the specific activity cards to use, and solutions are provided for some of the problems that were most frequently encountered by the author's students as they worked on extending their games. The author's school and home addresses and telephone numbers are provided.

ED303144

Logo and Lexical Categories.

Freyd, Pamela

3 Oct 1988, 12p.

EDRS PRICE -- MF01/PC01 plus postage.

DOCUMENT TYPE: Teaching Guide (052); Position Paper (120)

MAJOR DESCRIPTORS: *Computer Assisted Instruction; *Discussion (Teaching Technique); *Grammar; *Microcomputers; *Programing; *Sentence Structure

MAJOR IDENTIFIERS: *LOGO Programing Language

The use of the Logo programing language in natural language manipulation provides the basis for the development of the computer-assisted grammar instruction program for children that is described in this paper. The computer activities suggested are designed to get children in grades 4-12 to formulate rules of grammar based on their own knowledge of English. These activities include a variation of the party game MadLibs, in Logo, which is used to present a story shell with blanks to be filled in by users, and the use of Logo to write a program that can generate random sentences. Discussions about the nature of natural language and lexical categories in particular can be generated by these programming activities. Samples of the screen displays of the various software programs discussed are included. (9 references)

ED303137

Crazy Critters: Creating New Life Forms in Logo.

Gelman, Michael A.

7 May 1988, 17p. Paper presented at the Great Lakes/East Coast LOGO Conference (Cleveland, OH, May 7, 1988).

EDRS PRICE -- MF01/PC01 plus postage.
DOCUMENT TYPE: Computer Programs (101); Conference Paper (150)
MAJOR DESCRIPTORS: *Computer Games; *Computer Software; *Microcomputers
MAJOR IDENTIFIERS: *LOGO Programing Language

This paper lists the commands for three programs in Logo: Peppy and the Maze, Caterpillars and Butterflies, and the Robot Arm.

ED306952

Verbal Interaction in Computer-Assisted Cooperative Problem-Solving Groups.

King, Alison

Apr 1988, 26p. Paper presented at the Annual Meeting of the American Educational Research Association (New Orleans, LA, April 1-4, 1988).
EDRS PRICE -- MF01 plus postage. PC not available from EDRS.
DOCUMENT TYPE: Research Report (143); Conference Paper (150)
MAJOR DESCRIPTORS: *Computer Assisted Instruction; *Cooperative Learning; *Group Dynamics; *Peer Relationship; *Problem Solving; *Verbal Communication
MAJOR IDENTIFIERS: *LOGO Programing Language

The verbal interaction and problem-solving behavior of groups of high and average ability learners were compared during computer-assisted cooperative problem-solving to determine the problem-solving behaviors that relate to success within this context. Thirty-six fourth grade students were assigned to groups of three to form 12 groups, six of high and six of average academic ability. All groups were given the task of using Logo Turtlegraphics to reproduce a given line design on the computer screen. Results of the task were evaluated using four predictors of problem-solving success: (1) asking more task-related questions; (2) using a greater variety of problem-solving strategies; (3) spending more time on strategy; and (4) showing higher levels of strategy elaboration. It was found that high ability groups invested more time in strategy planning, used a greater variety of strategies and a greater number of long task statements, reached higher levels of strategy elaboration, and engaged in more social talk. The additional time that successful groups spent on problem-solving strategies was related to their use of longer task statements, questioning, and variety of problem-solving strategies. These findings suggest that teachers might try to foster the kinds of verbal interaction and problem-solving behaviors that appear to promote success in group computer learning, and that software should be designed in such a way as to stimulate group members to interact by asking questions of each other which may in turn promote the problem-solving process. A table depicting the means for a series of 2 (ability) by 2 (success) analyses of variance on each of the verbal interaction and strategy use variables is appended. (28 references)

ED306125

Inquiry-Based Instruction of Pre-Proof Geometry with Logo.

Lehrer, R.; And Others

[Jan 1987], 15p. Drawings may not reproduce well.
EDRS PRICE -- MF01/PC01 plus postage.
DOCUMENT TYPE: Teaching Guide (052)
MAJOR DESCRIPTORS: *Computer Assisted Instruction; *Elementary School Mathematics; *Geometric Concepts; *Geometry; *Mathematics Instruction
MAJOR IDENTIFIERS: *LOGO Programing Language

This material describes a sequence of inquiry-based instruction with Logo that is designed to teach young children (fourth grade or younger) about pre-proof geometry. Pre-proof geometry includes concepts such as open versus closed paths, angles, lines, polygons, and relations among polygons. Inquiry-based instruction relies upon questions to help a student reflect upon actions. The curriculum is informed by the van Hiele model of thinking in geometry. Logo provides a concrete medium to help children make transitions from visually oriented thought to more descriptively oriented thought. Each instructional session is divided into declarative and procedural interpretations of concepts. Declarative interpretations present the basic facts required to distinguish between instances and non-instances. In contrast, procedural interpretations specify how to create an instance of the concept. The first three lessons are reviews of essential Logo concepts. Fourteen additional sessions for Logo instruction are included. Questions are provided in each session.

ED306934

Animation in Logo: A Reinforcement Activity.

McCoy, Leah P.; Kreiger, Lisa W.

May 1988, 9p. Paper presented at the Great Lakes/East Coast Logo Conference (Cleveland, OH, May 6-7, 1988).
EDRS PRICE -- MF01/PC01 plus postage.
DOCUMENT TYPE: Teaching Guide (052); Computer Programs (101); Conference Paper (150)
MAJOR DESCRIPTORS: *Animation; *Computer Software; *Problem Solving; *Programing; *Reinforcement
MAJOR IDENTIFIERS: *Iterative Methods; *LOGO Programing Language

This reinforcement activity has been used by students from the elementary school level to the graduate school level who possess intermediate level ability in programming Logo. The activity, which consists of writing Logo programs that animate an object, can have several positive effects as it: (1) helps develop problem-solving skills; (2) encourages students to work together and share ideas; (3) can motivate accelerated students; and (4) offers excellent practice in the use of variables, procedures, conditionals, and iteration/recursion. While the six sample procedures included for animated Logo are written for LogoWriter, they can be easily adapted to other versions of Logo.

ED302387

Flips, Turns, and Tessellations: Teaching Geometry with Logo.

Pereira, Peter

1985, 12p. Paper presented at the West Coast Logo Conference (Los Angeles, CA, November 21-23, 1985).
EDRS PRICE -- MF01/PC01 plus postage.
DOCUMENT TYPE: Teaching Guide (052); Computer Programs (101); Conference Paper (150)
MAJOR DESCRIPTORS: *Computer Software; *Computer Uses in Education; *Elementary School Mathematics; *Geometry; *Mathematics Instruction; *Teaching Methods
MAJOR IDENTIFIERS: *LOGO Programing Language

Some mathematics educators feel that too little geometry is taught in elementary schools. This may have serious effects as many students arrive in the traditional high school geometry course without essential backgrounds in informal geometry. The result of this lack of preparation is often lower scores on standardized tests. In this situation, LOGO turtle geometry has some possibilities in the teaching of traditional synthetic geometry, transformational geometry, and coordinate geometry. This document uses turtle geometry to describe the space in which students live. Some activities, tool procedures, and suggestions for how this method can be used in elementary and middle school classrooms are presented. Included are several pattern block designs, a cutout pattern for pattern blocks, and computer procedures for pattern block designs and tangrams.

ED305908

The Effect of LOGO Instruction Method on Problem Solving Skills and the Relationship of Cognitive Style on Problem Solving Skills Learned through LOGO Instruction.

Roach, Debra Bruene

Jul 1988,75p. Master's Thesis, University of Northern Iowa.
EDRS PRICE -- MF01/PC03 plus postage.
DOCUMENT TYPE: Thesis (042); Research Report (143)
MAJOR DESCRIPTORS: *Field Dependence Independence; *Grade 3; *Intermode Differences; *Problem Solving; *Skill Development; *Teaching Methods
MAJOR IDENTIFIERS: *LOGO Programing Language

The study compared the effects of two instructional strategies for teaching the programming language, Logo, on the problem solving skills of third graders. The two strategies are the guided discovery approach, a student-directed learning environment with the teacher as a facilitator, and the direct instruction approach, with specific teacher-directed activities being used to teach direct transfer of problem solving skills. The relationship of two cognitive styles—field dependence and field independence—and the development of problem solving skills through the two different teaching methods were analyzed. The subjects were 49 third-grade students in three existing classrooms. Ten weeks of instruction in Logo was given to two treatment groups, with a third group receiving no instruction. Data analysis showed that Logo instruction does improve problem solving skills, with both instructional methods improving skills at the same rate. The degree of students' field dependence did not affect their ability to gain problem solving skills by either method. The text is supplemented by six tables and appendixes provide supporting materials. (76 references)

81

ED299953

The Cross-Contextual Transfer of Problem Solving Strategies from Logo to Non-Computer Domains.

Swan, Karen; Black, John B.

Apr 1988, 17p. Paper presented at the Annual Meeting of the American Educational Research Association (New Orleans, LA, April 5-9, 1988).

EDRS PRICE -- MF01/PC01 plus postage.

DOCUMENT TYPE: Research Report (143); Conference Paper (150)

MAJOR DESCRIPTORS: *Academic Achievement; *Learning Strategies; *Problem Solving; *Programing; *Transfer of Training

MAJOR IDENTIFIERS: *LOGO Programing Language; *Mental Models

This report investigated the relationship between learning to program LOGO and the development of problem solving skills. Subjects were 133 students in grades 4-8 who had at least 30 hours of experience with both graphics and lists programming in Logo. Students were randomly assigned to one of three contextual groupings, which received graphics, lists, or both graphics and list problems, according to grade level. Groupings remained constant across six instructional units corresponding to six problem solving strategies believed to be helpful for children programming computers: subgoals formation, forward chaining, backward chaining, systematic trial and error, alternative problem representation, and analogical reasoning. Highly significant differences were found across both contextual groupings and grade levels for all strategies except backward chaining, suggesting that a pedagogy combining a focus on particular aspects of general problem solving, direct instruction, and a mediated learning environment will enable the development of problem solving skills with Logo programming and their transfer to non-computing domains. Highly significant differences were also found between grade levels on measures of subgoals formation, systematic trial and error, and analogy, suggesting that there are developmental differences in students' abilities to acquire and transfer particular problem solving strategies. No significant differences were found between contextual groupings, suggesting that students' abilities to transfer problem solving skills did not vary depending upon the base context(s) in which those skills were acquired. Data results are displayed in one table. (43 references)

ED305916

Logo and Equity: A Natural Partnership.

Yoder, Sharon Burrowes; And Others

[Jun 1988], 9p. Paper presented at the National Educational Computer Conference (Dallas, TX, June 15-17, 1988).

EDRS PRICE -- MF01/PC01 plus postage.

DOCUMENT TYPE: Project Description (141); Conference Paper (150)

MAJOR DESCRIPTORS: *Computer Science Education; *Females; *Group Instruction; *Inservice Teacher Education; *Programing

MAJOR IDENTIFIERS: *Cleveland State University OH; *LOGO Programing Language

In the fall of 1987, Cleveland State University in conjunction with Cleveland area schools and Logo Computer Systems, Inc., embarked on a series of workshops designed to train teachers in group learning techniques and Logo programming for use in computer training for junior high school girls or minorities. The first serious exposure to computing often occurs at the junior high school level. Unfortunately, computing is usually associated with mathematics, and research indicates that by the junior high age, many girls and underrepresented minorities have acquired a high level of math anxiety. In addition, the teaching style often used in such classes does not involve group work, when research shows that group learning is preferred by girls. Logo lends itself well to both group work and to the use of graphics and sound, which are also preferred by girls. Each workshop focused on both Logo programming and computer equity issues. The success of the project is being evaluated by both formative and summative techniques. This project can serve as a model for others wanting to train teachers in equitable use of computers in the classroom, and at the conclusion of the project, workshop materials that include techniques for teaching both Logo and group learning will be made available. (12 references)

ED305920

Teaching Basic and Pascal "Logo Style."

Yoder, Sharon Burrowes

[Jun 1988], 15p. Paper presented at the National Educational Computer Conference (Dallas, TX, June 15-17, 1988).

EDRS PRICE -- MF01/PC01 plus postage.

DOCUMENT TYPE: Teaching Guide (052); Position Paper (120)

MAJOR DESCRIPTORS: *Assignments; *Creativity; *Discovery Learning; *Evaluation Criteria; *Programing; *Student Evaluation
MAJOR IDENTIFIERS: *LOGO Programing Language

In traditional programming courses assignments usually consist of problems that are somewhat closed in nature. That is, students are usually given a rigidly defined problem statement and are provided with a set of data that they are to use to test their program to produce a unique result. While this approach makes evaluation easy, it discourages creativity and exploration, and encourages inappropriate sharing of information. Another approach involves open-ended assignments that encourage students to make the problem their own and to include their own creative ideas in their work. Such projects require that the teacher carefully examine the objectives for a particular assignment and plan the evaluation scheme thoughtfully. However, student response to such open-ended assignments is quite positive and often very creative. An important side effect of such assignments is that group interactions are much more appropriate. Students help debug each others' projects rather than simply trading algorithms. Further, students learn from each person with whom they interact, thus extending their knowledge well beyond that acquired when solving a single solution problem. (4 references)

ED304325

East Coast Logo Conference '87 Proceedings (Arlington, Virginia, April 2-4, 1987).

International Council for Computers in Education, Eugene, OR.

1987, 247p. Small print and drawings may not reproduce well.

EDRS PRICE -- MF01/PC10 plus postage.
DOCUMENT TYPE: Conference Proceedings (021)
MAJOR DESCRIPTORS: *Computer Assisted Instruction; *Computer Software; *Computer Uses in Education; *Instructional Materials; *Science Activities
MAJOR IDENTIFIERS: *LOGO Programing Language

A total of 59 papers are compiled into these proceedings. The papers are organized alphabetically by each author's last name. A directory of speakers' names and addresses is included. In the index of this publication, papers are listed by session. General sessions are listed first, followed by 21 regular sessions: (1) "Logo and Music"; (2) "Logo Interactions"; (3) "Logo: FD to the Future"; (4) "Logo Connections"; (5) "Logo Environments"; (6) "Secondary Logo Integration"; (7) "Logolike Software and Other Compelling Media"; (8) "Special Goldenberg Session"; (9) "Building with Logo"; (10) "Logo and Robotics"; (11) "Logo in the Early Years"; (12) "Logo International"; (13) "Special Session: Vertical Logo Integration"; (14) "Elementary and Middle School Curriculum Applications for Logo"; (15) "Communicating through a Keyboard"; (16) "Thresholds and Ceilings"; (17) "Student Presentations"; (18) "Microcomputer Based Laboratories"; (19) "From the Classroom"; (20) "The Big Picture"; and (21) "Student Activities." Nine "paper sessions" are included.

ED297703

Software Selection, Evaluation and Organization and Software Reviews. Article Reprints.

International Council for Computers in Education, Eugene, OR.

[1985], 117p. In: *Computing Teacher,* 1982-1986 For a previous collection of reprints from the same source, see ED 262 757.

AVAILABLE FROM: International Council for Computers in Education, University of Oregon, 1787 Agate Street, Eugene, OR 97403.
EDRS PRICE -- MF01 plus postage. PC not available from EDRS.
DOCUMENT TYPE: Collection (020); Non-Classroom Material (055); Journal Article (080)
MAJOR DESCRIPTORS: *Computer Software; *Computer Uses in Education; *Evaluation Methods; *Instructional Material Evaluation; *Media Selection
MAJOR IDENTIFIERS: *Software Evaluation

This collection of reprints from *The Computing Teacher* contains 11 articles on the selection, evaluation, and organization of software published between August 1983 and March 1986, as well as more than 20 reviews of educational software packages published between December 1982 and June 1986. The articles are: (1) "The New Wave of Educational Software" (Ludwig Braun); (2) "How Do Teacher and Student Evaluations of CAI Software Compare?" (Barbara Signer); (3) "The DISC Model for Software Evaluation and Support Material Design" (Shelly Yorke Rose and Carol Klenow); (4) "Cooperative Learning: One Key to Computer Assisted Learning" (David W. Johnson and Roger T. Johnson); (5) "Teacher + Computer

= More Learning" (Cathy Chmielowski Carney); (6) "Teaching with Your Fingertips " (Sharon Burrowes); (7) "Selecting Computer Software—We Take It Seriously " (Jean Donham); (8) "The Software Selection Process: Some Management Questions" (Anne Batey); (9) "Enrichment Courseware for Middle School Mathematics" (Lois Edwards); (10) "Doing Science" (Richard C. Adams); and (11) "Project DISC: Developing Indian Software Curriculum" (Carolyn Jacobi and Carl Edeburn). The computer software programs reviewed are designed for use in teaching problem-solving and reasoning skills; Boolean logic and basic elements of computer circuitry; reading skills; graphics programming; computer literacy; physics; science; social studies; writing; word processing; spelling; music; reading readiness; planning, writing and studying; animation, graphics, art; keyboarding; mathematics; robotics; Logo; and geometry. Other programs include grading systems, integrated applications, and readability analysis. Each review provides the name of the software program, the name of the reviewer, the producer's name, target audience, hardware requirements, and cost.

Mathematics

ED300641

Vocational Related Mathematics Teaching Utilizing Interactive Computer Technology.

Burrell, Lewis P.

23 Nov 1988, 38p. Paper presented at the Ohio Department of Education's Research Dissemination Conference (Columbus, OH, November 23, 1988).

EDRS PRICE - MF01/PC02 plus postage.

DOCUMENT TYPE: Conference Paper (150); Research Report (143)

MAJOR DESCRIPTORS: *Computer Assisted Instruction; *Exceptional Persons; *Individualized Instruction; *Mathematics Instruction

A mathematics program was developed and implemented at the Jefferson County (Ohio) Joint Vocational School to raise the mathematics functioning of special needs students by using interactive computers. Special needs students were pre- and posttested with the Wide Range Achievement Test, Arithmetic section. The 11th-grade students functioning at the lowest levels were assigned to a mathematics laboratory one period per day for 22-day rotation intervals. A grade-level equivalency chart was developed, and each student was assigned interactive mathematics diskettes from commercially available software at the appropriate level. Students were assisted individually by a mathematics teacher. Data were collected on 11th-grade groups for three years. During the initial pilot year, a sample of 28 students had average gains of more than two grade levels; similar gains were reported in subsequent years and with adult students. The basic components of this project are easily replicable by school districts nationwide. The appendixes include statistical data analyses and a list of commercial computer math programs.

ED302424

A Review of Selected Microcomputer Software Packages with Lessons for Teaching Mathematics Grades 8-12. Volume 2. A Curriculum Development Project of the Project To Increase Mastery of Mathematics and Science (PIMMS).

Cetorelli, Nancy; And Others

Wesleyan University, Middletown, CT.

Apr 1988, 193p. For other documents from PIMMS, see ED 302 422-425.

EDRS PRICE - MF01/PC08 plus postage.

DOCUMENT TYPE: Teaching Guide (052)

MAJOR DESCRIPTORS: *Computer Assisted Instruction; *Courseware; *Geometry; *Mathematical Concepts; *Secondary School Mathematics

The purpose of this project is to help teachers of mathematics use the computer to aid the teaching and learning of many mathematical concepts in a meaningful way. To this end, commercially available software packages are described which are versatile, cost effective, and easy to use. A review and several lessons, each including homework exercises, have been written for each package and are presented in ready-to-use form. Chapter 1, "Geometric Supposer: Triangles" (Sunburst), includes five lessons, such as types of triangles, angle sums, midsegments, similar triangles, and perpendiculars from a random point. Chapter 2, "Graphing Equations" (Conduit), consists of four lessons of linear equations including an equation and its graph, functions from a given slope, y-intercept or points, and reviews. Chapter 3, "Discovery Learning in Trigonometry" (Conduit) is a lesson about polar equations. Chapter 4, "Interactive Experiments in Calculus" (Prentice-Hall), contains three lessons about the nature of polynomial functions and techniques of numerical integration.

ED308065

Microcomputer Referents in Elementary Mathematics: A Sample Approach.

Connell, Michael L.

1989, 21p. Paper presented at the International Association for Computers in Education (San Francisco, CA, March 1989).

EDRS PRICE - MF01/PC01 plus postage.

DOCUMENT TYPE: Non-Classroom Material (055); Conference Paper (150)

MAJOR DESCRIPTORS: *Cognitive Structures; *Computer Assisted Instruction; *Concept Formation; *Elementary School Mathematics; *Problem Solving; *Teaching Methods

The mathematical experiences of elementary students often focus on memorizing facts and rules as opposed to making sense of the subject and developing problem solving skills. Students spend large amounts of time processing, memorizing and sorting collections of data which are tasks well performed by computer technology. To correct this situation, this paper describes an instructional model for problem solving. The learner proceeds through four problem types (manipulations, sketches, mental pictures, and abstractions) using the phases memory/recall, instructor-posed problem, and self-posed problem for each problem type. A sample application is given showing computer-assisted instruction. Included are 42 references.

ED306124

The Flagpole Factory: Providing a Referent for Linear Equations.

Connell, Michael L.; Ravlin, Susan B.

1989, 17p. Paper presented to the International Association for Computers in Education (New Orleans, LA, April 1988).

EDRS PRICE - MF01/PC01 plus postage.

DOCUMENT TYPE: Evaluative Report (142); Conference Paper (150)

MAJOR DESCRIPTORS: *Computer Assisted Instruction; *Computer Software; *Equations (Mathematics); *Mathematics Instruction; *Problem Solving; *Word Problems (Mathematics)

MAJOR IDENTIFIERS: *Computer Assisted Problem Solving

A change of emphasis in mathematics education may be needed from a mechanical and computational focus to a problem-solving approach. A first step in facilitating this goal is to place children in situations emphasizing problem-solving skills, requiring them to develop and apply their own logic structures. This paper describes a microcomputer based interactive icon processor for use in helping students develop a referent base for the solution of systems of simultaneous linear equations. The instructional model used in this paper proceeds from the initial use of manipulatives through abstraction via four transitional problem types: manipulatives, sketches, mental pictures, and abstraction. The processor as an anthropomorphic expert is available when help or feedback is needed, and as currently implemented, possesses a certain degree of responsiveness to individual differences in problem-solving strategy. In addition, the computer keeps a chronological record of the operations a student using the software performs, as well as the number, content, and sequencing of hints given. A sample word problem and solution steps are appended.

ED306141

Effects of CAI Mathematics on Student Performance: A Nine Year Longitudinal Study.

DelForge, Clarence; Clark, J. Milford

[1989], 19p.

EDRS PRICE - MF01/PC01 plus postage.

DOCUMENT TYPE: Research Report (143)

MAJOR DESCRIPTORS: *Computer Assisted Instruction; *Elementary School Mathematics; *Mathematical Enrichment; *Mathematics Achievement; *Mathematics Instruction

In 1976, students in the fourth, fifth, and sixth grades in a multigraded classroom who had evidenced low mathematics scores on the Iowa Test of Basic Skills were selected to work on the Hewlett-Packard mathematics program for 10 minutes each day on a classroom computer. The higher performing students (the upper 55% of the class) were selected as a control group and worked on the computer program for only 10 minutes per week. The experimental group showed progress. A follow-up study of the performance rate of both groups on the North Carolina Competency Test in Mathematics was conducted when the students were in their eleventh-grade year: 35 of the original 51 students participated. The pass rate of students in the experimental group was significantly higher than that of students in the control group.

ED307117#

Mathematics Teaching: The State of the Art.

Ernest, Paul, Ed.

1989, 277p.

REPORT NO.: ISBN-1-85000-461-7

AVAILABLE FROM: The Falmer Press, Taylor & Francis, Inc., 1900 Frost Rd., Suite 101, Bristol, PA 19007 ($25.00 paperback—ISBN-1-85000-461-7; $49.00 hardcover—ISBN-1-85000-460-9).

DOCUMENT NOT AVAILABLE FROM EDRS.

DOCUMENT TYPE: Book (010); Collection (020)

MAJOR DESCRIPTORS: *Computer Uses in Education; *Mathematics Curriculum; *Mathematics Instruction; *Mathematics Tests; *Social Influences

This book which treats the central issues facing mathematics teaching today, provides both a picture of current practice and innovation and a state of the art review of research in mathematics education. The first section, "Innovations," provides an overview of new technologies, new forms of assessment, and new curriculum developments. The second section, "New Research Perspectives," discusses aspects of the primary and secondary mathematics curriculum, a critical examination of some of the sacred cows of mathematics teaching, and the constructivist view of the learning of mathematics applied to the teaching and assessment of mathematics understanding. The final section, "The Social Context" of mathematics teaching, includes discussions of the issue of gender and mathematics, the implicit social and political values of mathematics and mathematics education, multicultural and antiracist aspects of mathematics teaching, and the mathematics teacher.

ED302188

The Voyage of the MIMI.

Gibbon, Sam; Hooper, Kristina

Jun 1986, 13p. Paper presented at an Invitational Conference on Multimedia in Education (Cupertino, CA, June 19-20, 1986). In: *Learning Tomorrow: Journal of the Apple Education Advisory Council*, n3 p195-207 Spr 1987. For the complete journal, see ED 302 179.

EDRS PRICE - MF01/PC01 plus postage.

DOCUMENT TYPE: Journal Article (080); Conference Paper (150)

MAJOR DESCRIPTORS: *Computer Software; *Educational Television; *Material Development; *Mathematics Instruction; *Multimedia Instruction; *Science Instruction

MAJOR IDENTIFIERS: *Bank Street College of Education NY

The Voyage of MIMI is a major educational project housed at Bank Street College (New York) which is directed toward the development of extensive television, computer software, videodisc, and print materials for use in science and mathematics education in grades 5-7. The first series has been completed, and includes a 13-part dramatic television series about a scientific investigation of whaling on the East Coast on a ship called the MIMI. In the series, research scientists and a crew of students note patterns of whale migration using a number of scientific approaches, and encounter a number of exciting adventures. In addition, there are 13 television documentary-style visits to different "real" scientific establishments. These television materials are accompanied by a teacher's guide, a book describing the television series, and four computer programs. The computer programs include simulations of ecosystem development and population growth patterns, a navigation game, and computer-based tools for measurement experiments. Evaluations of the first series indicated that: (1) the dramatic story presented in the television series served as an excellent motivator for students in the areas of science and mathematics, and a number of the characters provided excellent role models; (2) teachers found the materials both exciting and innovative, but somewhat difficult to fit into their traditional classroom concepts; and (3) the production of the materials was extremely expensive, resulting in large uncertainties about available funding and the omission of some intended developments.

ED303369

Metaphors for Understanding Graphs: What You See Is What You See.

Goldenberg, E. Paul; Kliman, Marlene

Educational Technology Center, Cambridge, MA.

1988, 30p. Drawings may not reproduce well.

EDRS PRICE - MF01/PC02 plus postage.

DOCUMENT TYPE: Research Report (143)

MAJOR DESCRIPTORS: *Computer Graphics; *Graphs; *Mathematical Concepts; *Mathematics Instruction; *Metaphors; *Secondary School Mathematics

Computer graphing makes it easier for students and teachers to create and manipulate graphs. Scale issues are nearly unavoidable in the computer context. In interviews and protocol analysis with six students from grade 8, and 12 students from grades 11 and 12, it became apparent that some aspects of scale are clearly understood very early while other aspects remain confusing to even some of the most successful students in pre-calculus and calculus, and that there is a consistency and meaning in metaphors which students invoked in explaining their ideas to themselves and teachers. Three metaphors inferred from students' words and one metaphor supplied by the authors are discussed. These are: (1) the computer as automatic paper and pencil; (2) scaling is like using a magnifying glass; (3) scaling as a rubber sheet (supplied by the authors); and (4) the mathematical curve as a bead necklace. Some implications concerning the curriculum are discussed.

ED297933#

Perspectives on Research on Effective Mathematics Teaching. Volume 1.

Grouws, Douglas A., Ed.; And Others

National Council of Teachers of Mathematics, Inc., Reston, VA. 1988, 261p.

REPORT NO.: ISBN-0-87353-254-6

AVAILABLE FROM: National Council of Teachers of Mathematics, 1906 Association Drive, Reston, VA 22091 ($15.00).

DOCUMENT NOT AVAILABLE FROM EDRS.

DOCUMENT TYPE: Research Report (143); Conference Proceedings (021)

MAJOR DESCRIPTORS: *Computer Assisted Instruction; *Elementary School Mathematics; *Mathematics Instruction; *Secondary School Mathematics; *Teacher Effectiveness

MAJOR IDENTIFIERS: *Mathematics Education Research

The papers and conference proceedings recorded in this monograph are from a conference on effective mathematics teaching. In addition to acknowledgements, foreword, introduction and participant list, the following articles are included: (1) "Teaching for Higher-Order Thinking in Mathematics: The Challenge for the Next Decade"; (2) "Interaction, Construction, and Knowledge: Alternative Perspectives for Mathematics Education"; (3) "Expertise in Instructional Lessons: an Example from Fractions"; (4) "Implications of Research on Pedagogical Expertise and Experience for Mathematics Teaching"; (5) "Content Determinants in Elementary School Mathematics"; (6) "Research and the Improvement of Mathematics Instruction: The Need for Observational Resources"; (7) "From Fragmentation to Synthesis: An Integrated Approach to Research on the Teaching of Mathematics"; (8) "Computer Usage in the Teaching of Mathematics: Issues That Need Answers"; (9) "Cross-Cultural Studies of Mathematics Teaching and Learning: Recent Findings and New Directions"; (10) "Can Teachers Be Professionals?"; (11) "Pervasive Themes and Some Departure Points for Research Into Effective Mathematics Teaching"; and (12) "An Agenda for Research on Teaching Mathematics".

ED297950

Information Technology and Mathematics: Opening New Representational Windows.

Kaput, James J.

Educational Technology Center, Cambridge, MA.

Apr 1986, 28p.

EDRS PRICE - MF01/PC02 plus postage.

DOCUMENT TYPE: Project Description (141); Research Report (143); Collection (020)

MAJOR DESCRIPTORS: *Cognitive Development; *Cognitive Processes; *Computer Uses in Education; *Elementary School Mathematics; *Information Technology; *Secondary School Mathematics

Higher order thinking skills are inevitably developed or exercised relative to some discipline. The discipline may be formal or informal, may or may not be represented in a school curriculum, or relate to a wide variety of domains. Moreover, the development or exercise of thinking skills may take place at differing levels of generality. This paper is concerned with how new uses of information technology can profoundly influence the acquisition and application of higher order thinking skills in or near the domain of mathematics. It concentrates on aspects of mathematics that relate to its representational function based on the beliefs that: (1) mathematics itself, as a tool of thought and communication, is essentially representational in nature, and (2) information technology will have its greatest impact in transforming the meaning of what it means to learn and use mathematics by providing access to new forms of representation as well as providing simultaneous access to multiple, linked representations. This report describes a few examples of novel software environments from the representation perspective, points to more novel approaches to curriculum reform in mathematics that will encourage the cultivation of higher order thinking skills and relates these to unresolved research questions and educational policy issues.

ED301600

Analysis of the Effects of the Computer Enhanced Classroom on the Achievement of Remedial High School Math Students.

Lang, William Steve; And Others

American Educational Research Association, Washington, D.C.

Mar 1987, 25p.

EDRS PRICE - MF01/PC01 plus postage.

DOCUMENT TYPE: Evaluative Report (142)

MAJOR DESCRIPTORS: *Computer Assisted Instruction; *Educational Assessment; *Instructional Effectiveness; *Mathematics Achievement; *Remedial Mathematics; *Secondary School Students

MAJOR IDENTIFIERS: *Governors Remediation Initiative

The effects of the use of computer-enhanced instruction with remedial students were assessed, using 4,293 ninth through twelfth graders—3,308 Black, 957 White, and 28 Other—involved in the Governor's Remediation Initiative (GRI) in Georgia. Data sources included the Comprehensive Tests of Basic Skills (CTBS), a data collection form developed for the study, and scores from tests accompanying each module of the computer-enhanced curriculum. Data were analyzed using the Statistical Package for the Social Sciences (1984). Analyses of variance were conducted on selected variables. The computer-based instruction used was found to be effective and showed superiority to traditional classroom instruction for the remedial students in the program. All comparisons showed significant gains on the CTBS, with the exception of the tenth-grade gain for subtest concepts and applications. The average gain for all students on total math was 4.772 normal curve equivalents. The magnitude of progress is still in question as the CTBS gain scores may not be representative of the math curriculum and the module unit tests are not norm referenced. GRI administrators need to reexamine in-depth the use of classroom aides, evaluate the module test items for sex bias, check the program screening process for racial bias, assess student gains for various racial categories, and assess any standardized assessment instrument used for evaluation of the project for criterion-related validity before use. Ten tables are provided. Lists of software and primary instructional materials, and the GRI Math Lab Data Collection Score Report and Demographics Forms for 1986 are appended.

ED306139

Micros and Elementary Math: Lesson Plans, a Directory of Software for Achieving Educational Objectives and Procedures for Evaluating Software.

Lounge, Joseph P. And Others

1986, 146p. For a related document, see ED 306 140. Cover title varies slightly.

REPORT NO.: ISBN-0-918452-92-9

AVAILABLE FROM: Learning Publications, Inc., 3008 Avenue C, Holmes Beach, FL 33509 ($19.95).

EDRS PRICE - MF01/PC06 plus postage.

DOCUMENT TYPE: Teaching Guide (052); Book-Product Review (072)

MAJOR DESCRIPTORS: *Computer Assisted Instruction; *Computer Software Reviews; *Elementary School Mathematics; *Mathematics Instruction; *Microcomputers

This book is organized in three major sections. The first section provides 15 lesson plans for the integration of activities involving computer uses in mathematics instruction. Each lesson plan includes grade level, objective, time, materials, important terms, background, suggestions, and activities. The second section provides a list of available math software covering addition; decimals; division; estimation; factoring; fractions; geometry; graphing; integers; money; multiplication; problem solving; rounding; and subtraction. Each software entry delineates the concepts to be taught, the appropriate grade levels, software titles and publishers, suggested retail costs, the types of computer hardware, and location of software evaluations. The third section describes human cognition and the evaluation questions for three categories of learning outcomes: verbal knowledge; intellectual skills; and cognitive strategies. Indices for software titles and publishers are included. Sample software evaluation forms are appended.

ED306140

Micros and Secondary Math: Lesson Plans, a Directory of Software for Achieving Educational Objectives and Procedures for Evaluating Software.

Lounge, Joseph P. And Others

1987, 125p. For a related document, see ED 306 139. Cover title varies slightly.

REPORT NO.: ISBN-1-55691-015-0

AVAILABLE FROM: Learning Publications, Inc., 3008 Avenue C, Holmes Beach, FL 33509 ($19.95).

EDRS PRICE - MF01/PC05 plus postage.

DOCUMENT TYPE: Teaching Guide (052); Book-Product Review (072)

MAJOR DESCRIPTORS: *Computer Assisted Instruction; *Computer Software Reviews; *Mathematics Instruction; *Microcomputers; *Secondary School Mathematics

This book contains three major sections. The first section provides 15 lesson plans for the integration of activities involving computer uses in mathematics instruction. Each lesson plan includes grade level, objective, time, materials, important terms, background, suggestions, and activities. The second section provides a list of available math software covering algebra; calculus; college math entrance examinations; geometry; graphing; logarithms; math games; basic math skills; problem solving; ratio and proportion; statistics and trigonometry. Each software entry delineates the concepts to be taught, the appropriate grade levels, software titles and publishers, suggested retail costs, the types of computer hardware, and location of software evaluations. The third section describes human cognition and the evaluation questions for three categories of learning outcomes: verbal knowledge; intellectual skills; and cognitive strategies. Indices for software titles and publishers are included. Sample software evaluation forms are appended.

ED300234

Multiple Representations of Mathematical Reasoning. A RAND Note.

McArthur, David; And Others

Rand Corp., Santa Monica, CA.

May 1988, 25p. Figures may not reproduce well.

AVAILABLE FROM: The RAND Corporation, Publications Department, 1700 Main Street, P.O. Box 2138, Santa Monica, CA 90406-2138 ($4.00; 25% off 25 or more copies).

EDRS PRICE - MF01 plus postage. PC not available from EDRS.

DOCUMENT TYPE: Project Description (141)

MAJOR DESCRIPTORS: *Algebra; *Computer Graphics; *Computer Oriented Programs; *Mathematics Instruction; *Secondary School Mathematics; *Symbols (Mathematics)

Described is the notion of multiple alternative representations of mathematical reasoning, particularly as they relate to algebraic notation and the potential of computers to change representations. Features of a desirable notation for algebraic problem solving are described. This is followed by a description of the RAND Corporation's intelligent algebra tutor and the specific tools it contains that support multiple representations: a boxes-and-weights tool and goal commands. These tools supply students with important learning opportunities. Finally, comments are made about continuing research in this area, and the importance of testing different representational systems in real educational contexts. In addition, theoretical work must be directed toward deriving a general classification scheme for representations.

ED304330

General Variable Skill, Computer Programming and Mathematics.

McCoy, Leah P.

1988, 10p. Paper presented at the Annual Meeting of the International Association for Computing in Education (New Orleans, LA, April 1988).

EDRS PRICE - MF01/PC01 plus postage.

DOCUMENT TYPE: Conference Paper (150); Research Report (143)

MAJOR DESCRIPTORS: *Computer Uses in Education; *Elementary School Mathematics; *Mathematics; *Programing; *Science Programs; *Secondary School Mathematics

MAJOR IDENTIFIERS: *General Variable Skill

The question of whether to teach computer programming to elementary and secondary students has been widely debated. This study examines the relationship between computer programming experience, mathematics experience, and general variable skill. The sample consisted of 46 students (aged 9 to 17) at a summer computer camp. The programming level was determined from results of a camp placement test as novice, intermediate, or advanced. Mathematics experience was defined as the number of years of algebra-and-above courses that students had completed. Variable skill was determined from scores on the General Variable Skill Test. This study reports that both computer experience and mathematics experience were significantly correlated with general variable skill. Further, the relationship of computer programming experience with general variable skill was stronger than the relationship of mathematics experience with the variable skill.

ED308071

Use of Variables: Algebra-Computer-English Translation.

McCoy, Leah P.

1989, 16p. Paper presented at the International Association for Computing in Education Conference (San Francisco, CA, March, 1989).

EDRS PRICE - MF01/PC01 plus postage.

DOCUMENT TYPE: Research Report (143); Test, Questionnaire (160)

MAJOR DESCRIPTORS: *Algebra; *Computer Uses in Education; *Concept Formation; *Secondary School Mathematics; *Symbols (Mathematics); *Test Items

Results of empirical research relating computer programming instruction and understanding of the concept of mathematical variables is unclear. While some studies have found a positive relationship, others have reported nonsignificant results. The purpose of this study was to investigate high school students' (n=36) understanding of the concept of variable in computer programming and in algebraic context. High school juniors at a large private high school who had completed Algebra I and a computer literacy course were given the Algebra-Computer-English (ACE) Translation Test. The results of this study indicate that high school students with experience in both algebra and computer programming could work with variables in a computer context better than in an algebraic context. When given parallel items in both a computer program and algebraic context, their correct responses were not uniformly distributed. They were better able to translate to English the variables in the computer program than in the algebraic equation. A list of 30 references is included. An appendix includes the ACE Translation Test.

ED300270

Teaching Mathematics with Computers 9-12.

New York State Education Department, Albany.

1988, 66p. Drawings may not reproduce well.

AVAILABLE FROM: Publications Sales Desk, New York State Education Department, Room 164 EBA, Washington Avenue, Albany, NY 12234 ($1.50).

EDRS PRICE - MF01/PC03 plus postage.

DOCUMENT TYPE: Teaching Guide (052)

MAJOR DESCRIPTORS: *Computer Oriented Programs; *Computer Software; *Course Descriptions; *Mathematics Curriculum; *Mathematics Instruction; *Secondary School Mathematics

MAJOR IDENTIFIERS: *New York

This publication is designed to show how computers can be used effectively in secondary school mathematics curricula. Section I provides a description of the various types of software that could be incorporated into the secondary school mathematics curriculum. Procedures for evaluating the software and using it in a classroom or laboratory situation are discussed. Section II presents a model for the infusion of an ongoing component of computer instruction into New York State curricula. The focus is on a metacognitive approach to problem solving; examples are presented in the multi-step computer solutions to problems. Section III addresses the New York State Regents Action Plan which calls for a required second year of mathematics by presenting a computer mathematics course as an option for a local diploma. A list of topics is presented as a guide for course development, with a detailed lesson plan for one topic. Section IV proposes an advanced computer mathematics course, with suggested topics and approach. Section V provides two tables referencing software to specific content topics. Included in the appendices are two computer programs which teachers might use to illustrate the relevancy of using computers to solve real-world problems.

ED302410

An Information Processing Analysis of the Function of Conceptual Understanding in the Learning of Arithmetic Procedures.

Ohlsson, Stellan; Rees, Ernest

Pittsburgh University, PA. Learning Research and Development Center.

Aug 1988, 101p.

EDRS PRICE - MF01/PC05 plus postage.

DOCUMENT TYPE: Research Report (143)

MAJOR DESCRIPTORS: *Computer Simulation; *Concept Formation; *Learning Theories; *Mathematical Models; *Mathematics Instruction

Children learn arithmetic procedures by rote, rather than by constructing them with an understanding of numbers. Rote learning produces lack of flexibility, nonsensical errors, and other difficulties. Proposed is a theory of conceptual understanding and its role in learning and executing arithmetic procedures. The basic hypothesis is that principles constrain the possible states of affairs, thereby enabling learners to monitor their own performance and correct errors. A new knowledge representation is proposed, the state constraint. The theory has been implemented in the Heuristic Searcher, a computer model that learns arithmetic procedures on the basis of general principles encoded as constraints on search states. Simulated is: (1) the discovery of a general counting procedure in the absence of either instruction or solved examples; (2) flexible adaptation of a counting procedure in response to changed task demands; and (3) correction of subtraction errors in the absence of external feedback. The theory provides novel answers to several questions on conceptual understanding, generates testable predictions about human behavior, deals successfully with technical issues, and fares well on evaluation criteria. Future work will focus on how knowledge and experience interact in procedural learning. Over 110 references are included.

ED303372

Extending Technological Innovations in Schools: Three Case Studies and Analysis. Technical Report.

Shepard, Joyce Wolf; Wiske, Martha Stone

Educational Technology Center, Cambridge, MA.

Jan 1989, 54p. Drawings may not reproduce well.

EDRS PRICE - MF01/PC03 plus postage.

DOCUMENT TYPE: Research Report (143)

MAJOR DESCRIPTORS: *Case Studies; *Computer Assisted Instruction; *Educational Change; *Geometry; *Mathematics Instruction; *Secondary School Mathematics

This paper reports on a study of the spread of an educational innovation that used computer technology and software called "Geometric Supposers" to integrate inductive reasoning into geometry courses in three high schools. The study documented the efforts of teachers, who had worked with this innovation during the previous year, to support its dissemination to their colleagues. Three case studies documenting the dissemination of the "Supposers" are given. In each study, the school setting, context arrangement, instructional design, and school structure and fit are described. A final section compares the three cases focusing on ways of securing support for the innovation, recruiting new teachers, and providing instruction and implementation assistance.

ED301182

An Annotated Bibliography of the Literature Dealing with the Relationships between the Integration of Microcomputers and Students' Learning of Mathematics in Secondary Schools.

Simmons, Brian Scott

Jul 1988, 42p. Exit Project, Indiana University at South Bend.

EDRS PRICE - MF01/PC02 plus postage.

DOCUMENT TYPE: Review Literature (070); Bibliography (131); Dissertation (040)

MAJOR DESCRIPTORS: *Administrator Attitudes; *Computer Assisted Instruction; *Microcomputers; *Secondary School Mathematics; *Student Attitudes; *Teacher Attitudes

MAJOR IDENTIFIERS: *Computer Integrated Instruction

This paper reviews the research literature on relationships between the integration of microcomputers and students' learning of mathematics in secondary schools. Following a brief introduction and statement of the problem, annotations are provided for 31 studies in the following subject categories: (1) the extent of computer use in secondary schools in the United States; (2) computer-assisted instruction/computer-assisted learning; (3) computer integrated instruction; (4) student attitudes; and (5) faculty and administrator attitudes. Summaries of the research in each of the five categories are provided, and conclusions and recommendations are made concerning training, administrative leadership in integrating computers into the curriculum, opportunities for students to use microcomputers, and the need for computer resource personnel and further research. (30 references)

ED300245

An Intelligent Tutor for Basic Algebra: Preliminary Data on Student Outcomes.

Stasz, Cathleen

Rand Corp., Santa Monica, CA.

Apr 1988, 33p. Paper presented at the Annual Meeting of the American Educational Research Association (New Orleans, LA, April 5-9, 1988).

AVAILABLE FROM: The RAND Corporation, 1700 Main Street, P.O. Box 2138, Santa Monica, CA 90406-2138 ($4.00, 25% off on 25 or more copies).

EDRS PRICE - MF01 plus postage. PC not available from EDRS.
DOCUMENT TYPE: Research Report (143); Conference Paper (150)
MAJOR DESCRIPTORS: *Algebra; *Computer Assisted Instruction; *Electronic Classrooms; *Mathematics Instruction; *Secondary School Mathematics; *Tutorial Programs

Intelligent tutoring systems (ITS) aim to improve upon previous computer-aided instruction programs by embedding much of the expert knowledge that good human teachers possess. While ITS research has a practical goal of developing programs that assist students in learning, there is little data on their instructional effectiveness. This paper presents preliminary student outcomes from the initial introduction of a prototype intelligent computer-based algebra tutor in a California high school. The focus is on student characteristics, including their background and attitudes about computers and computer-based instruction, and their evaluation of the tutor's usefulness for learning. Pre- and post-semester algebra achievement tests and final course grades provide data on student learning for 80 participants. It was concluded that: (1) positive attitudes toward learning with computers, experiences with this algebra tutor and previous computer experience appear to be unrelated to actual achievement in algebra; (2) there is a significant negative relationship between programming and overall algebra achievement; (3) gender differences existed; and (4) the preliminary data tell little about the relationships between student characteristics, overall achievement, and the nuances of learning algebra with an intelligent tutoring system. (Appended is the student questionnaire and achievement test.)

ED302415

Investigations in Mathematics Education, Volume 21, Number 2.

Suydam, Marilyn N., Ed.; Kasten, Margaret L., Ed.

Ohio State University, Columbus, Ohio. Information Reference Center for Science, Mathematics, and Environmental Education.

1988, 70p. *Investigations in Mathematics Education*, v21 n2 Spr 88. For previous edition, see ED 296 888.

AVAILABLE FROM: SMEAC Information Reference Center, 1200 Chambers Road, Room 310, Columbus, OH 43212 (U.S. Subscription $8.00; $2.75 single copy).
EDRS PRICE - MF01/PC03 plus postage.
DOCUMENT TYPE: Serial (022); Research Report (143); ERIC Product (071)
MAJOR DESCRIPTORS: *Computer Uses in Education; *Experiential Learning; *Mathematics Achievement; *Mathematics Anxiety; *Problem Solving; *Secondary School Mathematics

This publication is an abstracted compilation of 11 investigations. The information includes purpose, rationale, research design and procedures, findings, interpretations, abstractor's comments, previous research, procedure and statistical methods, and further research. Contained within are: (1) "Gender-Based Differential Item Performance in Mathematics Achievement Items"; (2) "The Relationship between Mathematics Anxiety and Achievement Variables"; (3) "A Teaching Strategy for Elementary Algebraic Fractions"; (4) "Resequencing Skills and Concepts in Applied Calculus Using the Computer as a Tool"; (5) "Computer Programming and Logical Reasoning"; (6) "The Influence on Mathematics Test Scores, by Ethnicity and Sex, of Prior Achievement and High School Mathematics Courses"; (7) "Mathematics Achievement as a Function of Language"; (8) "Verbal Clarifying Behaviors, Mathematics Participation, Attitudes"; (9) "The Development of Informal and Formal Mathematical Thinking in Korean and U.S. Children"; (10) "Mathematics Education Research Studies in Journals as Indexed by Current Index to Journals in Education, October-December 1987"; and (11) "Mathematics Education Research Studies Reported in *Resources in Education*, October-December 1987."

ED303364

Collaborative Research Goes to School: Guided Inquiry with Computers in Classrooms. Technical Report.

Wiske, Martha Stone; And Others

Educational Technology Center, Cambridge, MA.

Dec 1988, 80p.

EDRS PRICE - MF01/PC04 plus postage.
DOCUMENT TYPE: Project Description (141)
MAJOR DESCRIPTORS: *Computer Uses in Education; *Curriculum Design; *Secondary School Mathematics; *Secondary School Science; *Theory Practice Relationship
MAJOR IDENTIFIERS: *Collaborative Research

Twin aims—to advance theory and to improve practice in science, mathematics, and computing education—guided the Educational Technology Center's (ETC) research from its inception in 1983. These aims led ETC to establish collaborative research groups in which people whose primary interest was classroom teaching and learning, and researchers concerned primarily with developing and testing theory, would keep each other honest. Several such groups identified targets of difficulty in the K-12 science, mathematics, and programming curricula and proceeded to develop experimental approaches including new technologies to improve teaching of these conceptually difficult topics. Most groups began with close observations of individual students and progressed to design materials and activities for teaching experiments which they conducted first with small groups and then with whole classrooms. Three of ETC's research groups had the following proposals: (1) using microcomputer based laboratory equipment and other technologies to teach students about heat and temperature; (2) infusing a programming "metacourse" into introductory classes in BASIC; and (3) teaching with the "Geometric Supposers" to incorporate inductive reasoning into traditional geometry courses. Included are goals, approaches, and implementation requirement for the innovations; discussion of the laboratory sites; and findings for introducing and integrating new technologies.

ED303371

From Recitation to Construction: Teachers Change with New Technologies. Technical Report.

Wiske, Martha Stone; Houde, Richard

Educational Technology Center, Cambridge, MA.

Nov 1988, 27p.

EDRS PRICE - MF01/PC02 plus postage.

DOCUMENT TYPE: Research Report (143)

MAJOR DESCRIPTORS: *Computer Assisted Instruction; *Geometry; *Mathematics Instruction; *Mathematics Teachers; *Secondary School Mathematics; *Teacher Response

Computer technology may be a powerful support for teaching through guided inquiry, but this process still depends on teachers who often find it difficult to carry it out in classrooms. This article examines the efforts of a group of secondary school geometry teachers to shift their instruction toward guided inquiry with the use of a computer software program called the "Geometric Supposers." The study focuses on the evolution of the teachers' concerns, and the curricular and pedagogical dilemmas they faced during their work with this innovative approach. The paper analyzes several themes in these teachers' experiences which are likely to reappear whenever teachers try to shift from the predominant recitation mode of "teaching as telling" to the widely recommended, but difficult, process of joining students in a process of constructing and critiquing. The five teachers who participated in this study were from three different schools.

ED303356

Essential Learning Outcomes: Mathematics.

New York City Board of Education, Brooklyn, N.Y. Division of Curriculum and Instruction.

1988, 150p.

REPORT NO.: Curric-00-6000-70; ISBN-0-88315-942-2

AVAILABLE FROM: New York City Board of Education, 131 Livingston Street, Brooklyn, NY 11201 ($8.00).

EDRS PRICE - MF01 plus postage. PC not available from EDRS.

DOCUMENT TYPE: Teaching Guide (052)

MAJOR DESCRIPTORS: *Computer Uses in Education; *Course Objectives; *Elementary School Mathematics; *Mathematics Achievement; *Secondary School Mathematics

This publication incorporates the topics and concepts of the New York State Education syllabi for mathematics from Pre-K through 12. The first section, "K-8 Mathematics Scope and Sequence," lists the New York City (NYC) mathematics performance objectives for grade levels K-8 sequentially by mathematical topic. The objectives for each module are coded using the NYC coding system. The second section, "Fundamentals of Mathematics," is designed to provide appropriate mathematics experiences for pre-algebra students. These experiences emphasize the development of computational skills, mathematical concepts, and problem-solving techniques. It may be used as the basis for a 1-year course. The complete course is divided into 12 basic units. The last two sections, "Consumer Mathematics (Part 1 and Part 2)" are designed to improve mathematical proficiency and understanding as the student is given practice in relevant problem-solving situations. The purpose of this course is to review, reinforce, and extend concepts learned in the second section. Part 2 contains computer applications for many of the topics contained in Part 1. The lessons involve using electronic spreadsheets and applying them to real-life situations.

ED307116

Independent Study Calculus via Computer Software. Final Report of Excellence in Education Grant.

Chestnut Ridge School District, New Paris, PA.

5 Jan 1987, 34p.

EDRS PRICE - MF01/PC02 plus postage.

DOCUMENT TYPE: Project Description (141); Research Report (143)

MAJOR DESCRIPTORS: *Calculus; *Computer Assisted Instruction; *Computer Software; *Electronic Mail; *Mathematics Instruction; *Secondary School Mathematics

This project developed a lesson authoring system, a component which provided communications between students and teachers using electronic mail, and calculus lessons which were formatively evaluated with 20 students at four high schools. The authoring system utilized word processors to write the lessons and a BASIC computer program to execute the word processor files. Interactive lessons written on a word processor using one operating system were transferred to a different operating system using communications software. To maintain computer compatibility, worksheets were used to present graphics material. Students and remote teachers communicated through electronic mail (e-mail). The lessons saved student responses to questions in a form which was easily included in e-mail messages. The remote teacher wrote answers to the questions in a form which was returned to the student on e-mail. These answers were executable as lessons and merged into existing lessons using word processing functions. This created a dynamic software library which was updated as student questions were answered. This report includes the cost of continuing the course and the student evaluation of the course.

ED306941

Instructional Software BSAP Correlations for Language Arts, Mathematics and Science, Grades 1-8.

South Carolina State Department of Education, Columbia. Office of Instructional Technology.

May 1988, 114p. For other reports on BSAP and computer software, see ED 253 887, ED 257 639, ED 265 077, ED 268 988, ED 295 592, and ED 306 942-943.

EDRS PRICE - MF01/PC05 plus postage.

DOCUMENT TYPE: Non-Classroom Material (055); Directory (132)

MAJOR DESCRIPTORS: *Courseware; *Evaluation Criteria; *Language Arts; *Mathematics Instruction; *Minimum Competencies; *Science Instruction

MAJOR IDENTIFIERS: *Software Evaluation

This booklet serves as an advisory reference to available software programs that address specific objectives for students in grades 1-8 in all three Basic Skills Assessment Program (BSAP) curriculum areas—language arts, mathematics, and science. A description of the basic skills objectives precede each curriculum section. Information provided for each software package includes the title, Dewey Decimal classification, application and copyright, grade level, BSAP objective, computer assisted instruction mode, system requirements, producer/vendor and price. A separate section offers information, criteria, and forms for computer software evaluation developed by Project SEED (Software Evaluation Exchange Dissemination). A list of the names and addresses of software vendors/producers is provided, and a form to evaluate the booklet is included.

Programming

ED304094

CASIP—A Novel Authoring Tool for Open Ended Natural Language CAI.

Anbar, Michael

Nov 1986, 7p. Paper presented at the International Conference of the Association for the Development of Computer-based Information Systems (28th, Washington, DC, November 10-13, 1986).

EDRS PRICE - MF01/PC01 plus postage.

DOCUMENT TYPE: Project Description (141); Conference Paper (150)

MAJOR DESCRIPTORS: *Authoring Aids (Programing); *Computer Assisted Instruction; *Instructional Design; *Programing; *Programing Languages

MAJOR IDENTIFIERS: *Natural Language; *Open Ended Questions

Computer-assisted instruction that uses open ended questions and calls for answers in natural language is the preferred method of instruction in many training situations. A novel authoring tool has been developed to meet the specific needs of open ended computerized instruction. This program, named CASIP, is essentially a single purpose interpreter which uses instructions contained in an ASCII file to interpret natural language in a prescribed context and to respond accordingly. This and other ASCII files, which contain the questions and the responses used during a learning session, are completely loaded into memory at the beginning of the session. The use of CASIP involves no preprocessing of the ASCII input files. To author computer-assisted instruction with CASIP requires no programming knowledge, and it can be done with any word processor or line editor. CASIP can be used to generate sophisticated open ended instructional sessions on any subject in just a few days. (4 references)

ED303153

On-Line Evaluation and Remediation of Programming Skills.

Barger, Robert N.

Apr 1988, 8p. Paper presented at the Annual Meeting of the International Association for Computing in Education (New Orleans, LA, April 5-9, 1988).

EDRS PRICE - MF01/PC01 plus postage.

DOCUMENT TYPE: Teaching Guide (052); Computer Programs (101); Conference Paper (150)

MAJOR DESCRIPTORS: *Computer Assisted Testing; *Evaluation Criteria; *Programing; Programing Languages; *Student Evaluation

This procedure for testing the mastery of programming skills uses online testing and correction. The student is presented with a test problem and is asked to solve it, encode the solution, debug the code, and save it on a floppy disk. The instructor corrects the program at the appropriate points through the use of REM statements. The erroneous or inefficient student-written lines are neutralized but retained in the REM statements so that they can be compared by the student with the correct lines. A variant on this procedure would have the instructor point out the place where an error has occurred, but the student would make the corrections and resubmit the test. Two sample questions with corrections in the BASIC Programming Language are provided, although the procedure could be adapted to many computer languages.

ED298940

On Flying to the Starting Line But Walking the Race: An Illumination of the Computer-Mind Metaphor.

Elliott, John D.

[May 1988], 8p.

EDRS PRICE - MF01/PC01 plus postage.

DOCUMENT TYPE: Position Paper (120)

MAJOR DESCRIPTORS: *Cognitive Processes; *Computers; *Information Processing; *Memory; *Programing

This essay considers whether the brain can accelerate the speed with which it absorbs or dispenses information in ways similar to those of a computer, and, if so, whether any of these speed-up approaches increase the speed of the processing of the information in the brain. It is suggested that there are tasks for which speed is important in both cybernetic and human information processing, and that the brain uses concepts, pronouns, and metaphors to speed up information processing in much the same way as the computer uses a shortened program, a lower level language, or a change in the central processing unit. In addition, the human and the computer can work in parallel, with the computer performing lower level tasks, while the human decides priorities or performs other tasks of higher level thinking. It is concluded that the human information processor and the computer are metaphors for each other, and that their relationships are equations rather than vectors since they can be mutually influential.

ED303359

A Potpourri of Pascal Programs.

Gimmestad, Beverly; And Others

1988, 37p. From a summer workshop entitled "Copper Country Mathematics and Computer Science Teachers Workshop." Drawings may not reproduce well.

SPONSORING AGENCY: National Science Foundation, Washington, D.C.

EDRS PRICE - MF01/PC02 plus postage.

DOCUMENT TYPE: Teaching Guide (052); Computer Programs (101)

MAJOR DESCRIPTORS: *Computer Graphics; *Computer Software; *Mathematical Enrichment; *Mathematics Teachers; *Programing Languages; *Secondary School Mathematics

MAJOR IDENTIFIERS: *PASCAL Programing Language

This is a collection of Pascal programs that were developed for a 1986 National Science Foundation-sponsored high school teachers' summer workshop. The programs can be used as a means of extending or enriching textbook material in either high school mathematics or Pascal courses. Some suggested uses are: (1) teacher demonstrations in mathematics classes; (2) programs for student use in mathematics classes; and (3) student assignments in a mathematics or Pascal course. The topics which are addressed in the Pascal programs come from a variety of mathematical areas: algebra, trigonometry, discrete mathematics, number theory, mathematical modeling, and numerical algorithms. Generally speaking, the programs are quite short and the programming level is appropriate for the average high school student who is enrolled in a Pascal course or who has completed such a course. The appendix contains standard types and procedures used by graphics programs written for use with Turbo Pascal on the IBM PC, including Cleargraphics, Graphicson, Graphicsoff, Plotpoint, Smoothplot, Drawline, PlotGeneral, DrawlineGeneral, DrawCircleGeneral, plotaxes, ConvertToPolar, and Rotate.

ED302184

NoteCards: A Multimedia Idea Processing Environment.

Halasz, Frank G.

Jun 1986, 7p. Paper presented at an Invitational Conference on Multimedia in Education (Cupertino, CA, June 19-20, 1986). In: *Learning Tomorrow: Journal of the Apple Education Advisory Council*, n3 p111-117 Spr 1987. For the complete journal, see ED 302 179.

EDRS PRICE - MF01/PC01 plus postage.

DOCUMENT TYPE: Journal Article (080); Conference Paper (150)

MAJOR DESCRIPTORS: *Computer System Design; *Information Processing; *Man Machine Systems; *Programing

MAJOR IDENTIFIERS: *Hypermedia; *Software Development

Notecards is a computer environment designed to help people work with ideas by providing a set of tools for a variety of specific activities, which can range from sketching on the back of an envelope to formally representing knowledge. The basic framework of this hypermedia system is a semantic network of electronic notecards connected by arbitrarily typed links. Four basic constructs are included in the system: notecards, links, browsers, and fileboxes. Notecards contain an arbitrary amount of information embodied in text, graphics, images, voice, or any other editable or presentable substance. Links are used to represent binary connections or relationships between cards. Browsers are cards that contain editable note-link diagrams showing the structure of some portion of the network. Fileboxes are cards that provide the user with a hierarchical filing structure for organizing collections of cards into topics or categories. The Notecards system was developed for, and runs with, the Xerox LISP environment and the Xerox 1100 workstation. In addition, Notecards can be integrated with other systems running in the LISP environment such as mail systems, databases, and rule-based expert systems. (2 references)

ED302221

The Effect of Computer Programming Instruction on the Development of Generalized Problem Solving Skills in High School Students.

Jones, Preston K.

14 Jun 1988, 46p. Ed.D. Practicum, Nova University.

EDRS PRICE - MF01/PC02 plus postage.

DOCUMENT TYPE: Practicum Paper (043)

MAJOR DESCRIPTORS: *Cognitive Processes; *Critical Thinking; *High School Students; *Programing; *Skill Development

MAJOR IDENTIFIERS: *BASIC Programing Language; *PASCAL Programing Language

This study investigated the extent to which participation by high school students in a computer programming course leads to improved critical thinking skills, and whether a significant difference exists in critical thinking skill development between participants in Pascal and BASIC classes. Three groups of high school students were tested using the Watson-Glaser Critical Thinking Appraisal: participants in a first-year BASIC class (N=52), participants in a first-year Pascal class (N=21), and above average (N=40) students in other classes who had had no exposure to programming. Group measures were compared using the t-test. Students enrolled in both programming classes scored significantly higher than their non-programming counterparts; however, exposure to a specific programming language—BASIC or Pascal—did not produce significant differences in test scores. The text is supplemented by five tables, and a copy of the survey instrument used to gather opinions on this topic from members of the FICS (Florida Instructional Computing Supervisors) is appended. (37 references)

ED304483

The Development of CAI: An Expert System in Education.

Kaiser, Javaid

[1985], 34p.

EDRS PRICE - MF01/PC02 plus postage.

DOCUMENT TYPE: Project Description (141)

MAJOR DESCRIPTORS: *Computer Assisted Instruction; *Courseware; *Expert Systems; *Programing Languages; *Technological Advancement

A brief overview of computer-assisted instruction (CAI) is provided. The history and theoretical framework of CAI and typical developmental stages involved in the implementation of a CAI system are outlined. The way CAI determines background knowledge of a student, presents information necessary to learn new concepts, sets its pace according to student needs, reinforces previous learning, and evaluates student performance qualifies it as an expert system. Developmental stages covered include: (1) conceptualization (development of project rationale); (2) design (development of behavioral objectives, choice of a learning theory, selection of content and instructional models, development of means of sequencing instruction and presenting materials, student support requirements, measurement of student performance, selection of computer language/program, development of means of selecting an "authoring system," and validation of design); and (3) implementation (coding in suitable author language, testing of the system to determine whether it meets product specifications, determination of overall instructional value of the CAI system, and marketing). Advantages and unresolved issues related to CAI are discussed.

ED305903

Autonomous Classroom Computer Environments for Learning. Progress Report and Annotated Bibliography.

Linn, Marcia C.

California Univ., Berkeley. School of Education.

May 1988, 13p.

SPONSORING AGENCY: National Science Foundation, Washington, D.C.

EDRS PRICE - MF01/PC01 plus postage.

DOCUMENT TYPE: Bibliography (131); Research Report (143)

MAJOR DESCRIPTORS: *Academic Achievement; *Classroom Environment; *Computers; *High School Students; *Intermode Differences; *Programing

This document provides both a brief progress report for the Autonomous Classroom Computer Environments for Learning (ACCEL) project and an annotated bibliography of publications from this project, the Computers and Problem Solving Project, and other recent publications from the ACCCEL (Accessing the Cognitive Consequences of Computer Environments for Learning) project and the ARP (Adolescent Reasoning Project). Two major project activities are described. One of the activities consisted of designing expert solutions to computer programming problems in order to communicate the techniques used by experts to solve programming problems. Designed to evaluate the effectiveness of these expert solutions, the other activity consisted of contrasting three educationally defensible alternatives for using these approaches and assessing the relative effectiveness of these approaches in 14 precollege classrooms. The findings of this assessment are reported: students either completed all three activities or one of the three; there were significant differences between the three different conditions for using the expert solution; and students learned more about programming when they participated in all activities from writing the program to reading the expert solution. Relationships between performance on the case study and the instructional provisions in the classroom were also assessed, and three factors were found to contribute to student learning: (1) access to computers; (2) feedback on student work; and (3) individual and small group assistance by the teacher. The project report contains four references, and the annotated bibliography contains 35 references.

ED305925

Conditions of Learning in Novice Programmers. Concept Paper.

Perkins, D. N.; And Others

Educational Technology Center, Cambridge, MA.

Apr 1985, 39p.

SPONSORING AGENCY: Office of Educational Research and Improvement (ED), Washington, DC.

EDRS PRICE - MF01/PC02 plus postage.

DOCUMENT TYPE: Position Paper (120); Evaluative Report (142)

MAJOR DESCRIPTORS: *Cognitive Style; *Learning Processes; *Learning Strategies; Microcomputers; *Problem Solving; *Programing; *Skill Development

Under normal instructional circumstances, some youngsters learn programming in BASIC or LOGO better than others. Clinical investigations of novice programmers suggest that this happens in part because different students bring different patterns of learning to the programming context. Many students disengage from the task whenever trouble occurs, neglect to track closely what their programs do by reading back the code as they write it, try to repair "buggy" programs by haphazardly tinkering with the code, or have difficulty breaking problems down into parts suitable for separate chunks of code. Such problems interfere with students making the best of their own learning capabilities: students often invent programming plans that go beyond what they have been taught directly. Instruction designed to foster better learning practices could help students acquire a repertoire of programming skills, perhaps with spinoffs having to do with "learning to learn." (29 references)

ED308835

Computer Access and Flowcharting as Variables in Learning Computer Programming.

Ross, Steven M.; McCormick, Deborah

Feb 1989; 10p.; In: *Proceedings of Selected Research Papers presented at the Annual Meeting of the Association for Educational Communications and Technology (Dallas, TX, February 1-5, 1989).* For the complete proceedings, see ED 308 805.

EDRS PRICE - MF01/PC01 plus postage.

DOCUMENT TYPE: Research Report (143); Conference Paper (150)

MAJOR DESCRIPTORS: *Academic Achievement; *Cognitive Style; *Computer Literacy; *Flow Charts; *Programing; *Student Attitudes

Manipulation of flowcharting was crossed with in-class computer access to examine flowcharting effects in the traditional lecture/laboratory setting and in a classroom setting where online time was replaced with manual simulation. Seventy-two high school students (24 male and 48 female) enrolled in a computer literacy course served as subjects. None had received any programming instruction. Four treatment groups were arranged by crossing the computer access variable (unlimited vs. limited) with flowcharting (required vs. not required), and five instructional units dealing with introductory concepts in the BASIC programming language were presented in eighteen 50-minute class periods. Results showed that group means on four of five posttest measures were directionally higher for the limited-access group than for the unlimited-access group; females performed better under limited access, while males showed the opposite pattern; and low-ability students performed better with unlimited access, while middle- and high-ability students performed conversely. In addition, students performed better when not required to submit flowcharts, and flowcharting appeared to be regarded by many students as an entirely separate task rather than as a programming aid. Gender was not significantly related to either achievement or attitude. Three important considerations for the teaching of programming are suggested by these results: (1) unlimited computer access may be less important than is generally assumed; (2) more time should be given to instruction in flowcharting than is typically done; and (3) males and females appear to have the same potential and instructional needs for learning programming. (12 references)

ED305926

Empirical Studies of a "Metacourse" To Enhance the Learning of BASIC.

Schwartz, Steven; And Others

Educational Technology Center, Cambridge, MA.

Apr 1988, 72p.

SPONSORING AGENCY: Office of Educational Research and Improvement (ED), Washington, DC.

EDRS PRICE - MF01/PC03 plus postage.

DOCUMENT TYPE: Research Report (143); Test, Questionnaire (160)

MAJOR DESCRIPTORS: *Cognitive Processes; *Metacognition; *Problem Solving; *Programing; *Transfer of Training

This report introduces the concept of a "metacourse"—i.e., the provision of mental models, problem solving strategies, key concepts, and other structures—to assist students in learning programming, and examines the effect of the use of such a metacourse on high school programming students. The experimental group consisted of 6 teachers who taught BASIC programming to 132 students at 5 high school laboratory sites, and the control group consisted of 9 teachers who taught 239 students at 8 control sites. The metacourse consisted of a series of eight instructional lessons interspersed throughout the semester. Students were given both pretests and posttests in cognitive skills, and observations of the experimental sites were also made. After examining these data, a second revised metacourse was developed and used with nine other teachers in seven new sites under conditions that more normally duplicate normal classroom innovations. The results showed that both the laboratory site and classroom site students who were exposed to the metacourse experienced significant improvement in their mastery of the BASIC programming language. However, the modest evidence of "transfer" skills found in the laboratory site was not evident in the second study under more normal classroom conditions. This suggests that transfer from programming is not normally obtained unless special efforts are made to explicitly design such elements into the intervention. Appended materials include the cognitive pretest/posttest, a test on BASIC, and a classroom observation worksheet.

ED302182

Issues in Designing a Hypermedia Document System: The Intermedia Case Study.

Yankelovich, Nicole; And Others

Brown University, Providence, RI. Institute for Research in Information and Scholarship.

Jun 1986, 53p. Paper presented at an Invitational Conference on Multimedia in Education (Cupertino, CA, June 19-20, 1986). In: *Learning Tomorrow: Journal of the Apple Education Advisory Council*, n3 p35-87 Spr 1987. For the complete journal, see ED 302 179.

EDRS PRICE - MF01/PC03 plus postage.

DOCUMENT TYPE: Journal Article (080); Conference Paper (150)

MAJOR DESCRIPTORS: *Computer Software; *Design Requirements; *Information Processing; *Man Machine Systems; *Programing

MAJOR IDENTIFIERS: *Hypermedia; *Software Development

Intermedia, a hypermedia system developed at Brown University's Institute for Research (Rhode Island) in Information and Scholarship, is first described, and then used as a case study to explore a number of key issues that software designers must consider in the development of hypermedia document systems. A hypermedia document system is defined as a system that provides a set of tools which allow authors to share a network of linked documents, link their own and others' documents together, leave notes for one another, and retrieve information stored in documents of different types. The major issues addressed include various design options for linking together multimedia documents, the contexts in which those links exist, and the need for visual representation of the links that exist within a given context. Twenty-one figures illustrate the text. (28 references)

Reading

ED300766

Can Computers Be Used for Whole Language Approaches to Reading and Language Arts?

Balajthy, Ernest

Nov 1988, 19p. Paper presented at the Annual Meeting of the Keystone State Reading Association (Hershey, PA, November 4-8, 1988).

EDRS PRICE - MF01/PC01 plus postage.

DOCUMENT TYPE: Conference Paper (150); Teaching Guide (052)

MAJOR DESCRIPTORS: *Computer Uses in Education; *Holistic Approach; *Reading Instruction; *Writing Instruction

MAJOR IDENTIFIERS: *Whole Language Approach

Holistic approaches to the teaching of reading and writing, most notably the Whole Language movement, reject the philosophy that language skills can be taught. Instead, holistic teachers emphasize process, and they structure the students' classroom activities to be rich in language experience. Computers can be used as tools for whole language experiences in reading and writing, based on principles of holistic language instruction. Classroom reading should center on children's literature rather than basal stories, and software of popular children's literature is available. Teacher feedback for writing should be provided during, not after, the writing process. For this, computer-based revision and editing programs are available for a wide variety of word processing software, giving feedback on grammar, usage, style, and organization. The transition from oral language to print should be as natural as possible, favoring guided language experience over direct instruction in subskills. Several computer programs allow children to create their own stories on the computer, then read the stories back to the children using voice synthesis. Writing should culminate in publishing in order for children to develop a sense of authorship. Desktop publishing is a key computer-based application for developing this sense of authorship in children. These are only a few of the ways in which computers can be used in the whole language classroom. (A bibliography of information on computers and whole language, and a list of educational software are appended.)

ED299539

Computers and Reading: 1984-1989. Selections from *Micro Missive*, the Newsletter of MicroSIG, The Special Interest Group for Microcomputers in Reading of the International Reading Association.

Balajthy, Ernest

Nov 1988, 72p.

EDRS PRICE - MF01/PC03 plus postage.

DOCUMENT TYPE: Collection (020)

MAJOR DESCRIPTORS: *Computer Assisted Instruction; *Reading Instruction

This publication is a collection of eight articles and ten software reviews written by the author for *Micro Missive* since 1984. *Micro Missive* is a quarterly newsletter that has regularly informed International Reading Association members of new developments in computer-based instruction and reading/language arts through articles, software reviews, and book reviews. In addition, a regular column in the newsletter, "Bits 'n' Bytes," has listed current news items of interest to computer-using teachers.

ED298937

Recent Trends in Minicomputer-Based Integrated Learning Systems for Reading and Language Arts Instruction.

Balajthy, Ernest

Mar 1988, 27p. Paper presented at the Rutgers University Spring Reading Conference (New Brunswick, NJ, March 1988).

EDRS PRICE - MF01/PC02 plus postage.

DOCUMENT TYPE: Book-Product Review (072); Project Description (141); Conference Paper (150)

MAJOR DESCRIPTORS: *Computer Assisted Instruction; *Courseware; *Language Arts; *Minicomputers ; *Reading Instruction

MAJOR IDENTIFIERS: *Integrated Learning Systems

This paper discusses minicomputer-based ILSs (integrated learning systems), i.e., computer-based systems of hardware and software. An example of a minicomputer-based system in a school district (a composite of several actual districts) considers hardware, staffing, scheduling, reactions, problems, and training for a subskill-oriented reading program for compensatory education students. Specific ILS software packages are then described: (1) the PLATO/WICAT System 300 for primary reading, reading comprehension, writing, language arts (with language arts skills, spelling, and sentence combining components), English as a Second Language, and other academic subjects; (2) the Computer Curriculum Corporation's MICROHOST system for mathematics, reading, language arts, and computer literacy from grade 1 through adult; (3) Houghton Mifflin's Dolphin Curriculum, which is designed to supplement teacher-directed instruction with computer-assisted instruction in reading and language arts skills; and (4) DEGEM Systems' TOAM Computer Aided Instruction System for mathematics and multiple choice drill instruction. The appendix lists publisher, former names, systems software, instructional components, and hardware configurations for each system. (8 references)

ED299559

Computer Presentational Features for Poor Readers' Recall of Information.

Calvert, Sandra L.; And Others

Aug 1988, 24p. Paper presented at the Annual Meeting of the American Psychological Association (96th, Atlanta, GA, August 12-16, 1988).

EDRS PRICE - MF01/PC01 plus postage.

DOCUMENT TYPE: Conference Paper (150); Research Report (143)

MAJOR DESCRIPTORS: *Computer Assisted Instruction; *Reading Improvement; *Reading Instruction; *Word Recognition

A study on children's recall of words presented on a computer was assessed as a function of action and verbal labels. Subjects, 80 public school children in a southeastern city, equally distributed between kindergarten and second grade and between high and low reading ability levels, interacted with different versions of a computer presentation. Within versions, words were presented with varying levels of visual action and verbal labels. Not surprisingly, older children recalled more words than did younger children. For the second graders, action presentation increased the poor readers' verbal recall to the level of their better reading peers. Results suggested that older children who have difficulty reading may well benefit from visual action emphasis of computer content. (One table of data and one figure are included; 27 references are attached.)

ED299548

The Use of Computers versus Basal Readers for Reading Comprehension in the Primary Grades.

Goldman, Janet M.

[1988], 18p.

EDRS PRICE - MF01/PC01 plus postage.

DOCUMENT TYPE: Research Report (143)

MAJOR DESCRIPTORS: *Basal Reading; *Computer Assisted Instruction; *Reading Comprehension

A 10-week study examined whether the use of computers could be more effective than basal readers for improving reading comprehension at the primary level. Subjects, 12 students from the second grade, were divided into two groups, 6 in the experimental group using computers only and 6 in the control group using basal readers only. Both groups used the H.B.J. Basal Reading Program's workbook. The students were given pre-and posttests using the Gates-McGinitie Reading Test, vocabulary and comprehension sub-tests, H.B.J. Reading Program's unit tests, and five selections on the computer using materials developed by Janet Goldman and released by Hartley Courseware. Results suggested that the use of computer-assisted instruction may be more effective than basal readers for improving reading comprehension at the primary level. (Four data charts are included.)

ED297303

Some Caveats When Applying Two Trends in Diagnosis: Remedial Reading. Eric Digest Number 6, 1988.

Kress, Roy

ERIC Clearinghouse on Reading and Communication Skills, Bloomington, IN.

1988, 3p.

EDRS PRICE - MF01/PC01 plus postage.

DOCUMENT TYPE: ERIC Product (071)

MAJOR DESCRIPTORS: *Computer Assisted Testing; *Informal Reading Inventories; *Reading Diagnosis; *Remedial Reading

Two trends have emerged in recent years in the diagnosis of remedial readers, which—when applied with caution—may be of reasonable value to the clinician and the teacher. One of these trends has been the promotion of informal assessments, and an accompanying plethora of commercial informal reading inventories (IRIs). These instruments are designed to replace any that might be made by the teachers and clinicians who use them, and thus they should be examined carefully and customized to minimize their significant limitations. IRIs are often used to place readers in materials of appropriate difficulty. Some reports in the ERIC database suggest it is harmful to place children in unnecessarily low reading groups; others show that many experienced teachers identify materials that will insure success for the remedial reader. Another trend is the use of computerized diagnosis of a reader. While such information would be useful as a part of data collection, it should not be a major factor in placement and instructional decisions, which require precise individual assessments.

ED306950

Effectiveness of a Teaching Tool for Individualized Instruction: An Interactive Computer Managed System, WICAT. November 1985 through June 1988.

Mys, Donald P.; Petrie, James

19 Jan 1989, 6p. A Special Report for the Michigan Educational Research Association Conference (Lansing, MI, January 19, 1989).

EDRS PRICE - MF01/PC01 plus postage.

DOCUMENT TYPE: Research Report (143); Conference Paper (150)

MAJOR DESCRIPTORS: *Academic Achievement; *Computer Managed Instruction; *Individualized Instruction; *Instructional Effectiveness; *Mathematics Skills; *Reading Skills

This paper describes the effectiveness of the WICAT (World Institute of Computer Assisted Teaching) instructional system at three schools in Dearborn, Michigan. The focus of the WICAT student achievement evaluation plan at Salina Elementary and Junior High Schools centered upon 1-year and 3-year student achievement in reading and mathematics. Students showed significant growth in both reading and mathematics during the 1987-1988 school year as measured by the Iowa Tests of Basic Skills, but the reading results were the same as occurred before WICAT. Mathematics grade equivalent gains, when compared to before WICAT, increased 50% for grade 2 students and 43% for grade 3 students. Salina grade 4 students also had about the same reading gains and significantly higher mathematics gains when compared to similar students in other schools who did not have WICAT instruction. Low achieving mathematics students appeared to show the greatest growth. While the Iowa Tests results did not report positive and significant achievement gains in reading, the Michigan Educational Assessment Program test results did show such gains as well as positive and significant results in reading. A separate research study showed statistically significant gains in student comprehension and algebra achievement at Fordson High School. An appendix describes the instructional programs which used WICAT, including a bilingual program for grades 2-6.

ED304115

Evaluation of Student Reading and Mathematics. WICAT Computer Managed Instructional Program, Salina Elementary School. November 1985 through June 1988. Bulletin No. 1345.

Mys, Donald P.; Petrie, Jim

Dearborn Public Schools, MI. Office of Research and Evaluation.

4 Nov 1988; 37p. Paper presented at the Institute for the Transfer of Technology to Education (Dallas, TX, November 5-7, 1988).

EDRS PRICE - MF01/PC02 plus postage.

DOCUMENT TYPE: Statistical Material (110); Evaluative Report (142); Conference Paper (150)

MAJOR DESCRIPTORS: *Academic Achievement; *Computer Assisted Instruction; *Elementary School Students; *Mathematics Instruction; *Reading Instruction

The World Institute of Computer Assisted Teaching (WICAT) system was installed in November 1985 at the Salina and Fordson Schools in Dearborn, Michigan, and selected students in grades two, three, and four received their regular reading and/or mathematics instruction in the WICAT computer laboratory. Achievement gains of these students were measured using the Metropolitan Achievement Test (METRO), the Iowa Tests of Basic Skills (ITBS), and the Michigan Educational Assessment Program (MEAP). Analyses of the test results indicated that students who had received WICAT instruction had significant achievement gains in mathematics and reading. The percentage of grade four students mastering reading skills increased from an average of 42.2 before WICAT to 51.2 after WICAT, and, in September 1987, 60.5% attained mastery. The average mathematics gains for second grade students increased 150 percent from a gain of 8 months to a gain of 12 grade equivalent months. Gains in third grade mathematics increased 143%, from 7 to 10 months. Low achieving mathematics students benefitted the most from the WICAT program, with gain scores of up to 14 months during one school year. One-year ITBS reading gains remained the same as before WICAT with gains of 8, 8, and 10 months respectively for second, third, and fourth grade students. Three-year METRO/ITBS mathematics gains were significant for grade four WICAT students when compared with the gains of similar non-WICAT students in other Dearborn schools. The test scores and other evaluation data are displayed in eight tables and in extensive appendixes.

ED298761

Computers, Reading, and Schema Theory: What's the Connection? An Evaluation of Reading Software According to Schema Theory.

Preisinger, Robin; And Others

Mar 1988, 45p. Paper presented at the Annual Meeting of the Teachers of English to Speakers of Other Languages (22nd, Chicago, IL, March 8-13, 1988).

EDRS PRICE - MF01/PC02 plus postage.

DOCUMENT TYPE: Evaluative Report (142); Conference Paper (150)

MAJOR DESCRIPTORS: *Computer Assisted Instruction; *English (Second Language); *Instructional Material Evaluation; *Reading Instruction; *Reading Material Selection

MAJOR IDENTIFIERS: *Schema Theory

A study used schema theory as a basis for developing an instrument to evaluate reading software. The instrument was designed to assess software used in English-as-a-second-language (ESL) reading instruction. Evaluation criteria and questions were developed to address the programs' interactive capabilities (flexibility, response to student errors, and ability to distinguish between significant and insignificant errors), approach to information processing (encouragement of the use of prediction and problem-solving strategies, use of text-based activities in the context of a reading passage, and encouragement of textual analysis skills for comprehension), approach to background knowledge (assumption of existing knowledge, and the building of schemata through pre-reading activities), and general software construction and use. The instrument was then used to examine a sampling of four current software packages. The results of the evaluations are presented, and the advantages and limitations of the instrument are discussed.

ED307573

Computers in Elementary Reading Instruction. Focused Access to Selected Topics (FAST) Bibliography No. 28.

Rasmussen, Sonja

ERIC Clearinghouse on Reading and Communication Skills, Bloomington, IN.

Apr 1989, 6p.

EDRS PRICE - MF01/PC01 plus postage.

DOCUMENT TYPE: ERIC Product (071); Bibliography (131)

MAJOR DESCRIPTORS: *Computer Assisted Instruction; *Reading Instruction

Addressing many aspects of the use of computers in elementary reading instruction, this annotated bibliography in six sections contains 27 items from the ERIC database from 1987 to April 1989. The first section contains items discussing the pros and cons of such use; the second section deals with organizational aspects of computer use in the schools; and advice for teachers is offered in the third section. The fourth section reviews specific software programs; the fifth section describes and evaluates programs in schools; and the final section samples research.

ED297263

The Effects of Strategy Training on the Identification of the Main Idea of Expository Passages. Report No. 4.

Stevens, Robert J.

Center for Research on Elementary and Middle Schools, Baltimore, MD.

Nov 1986, 39p.

EDRS PRICE - MF01/PC02 plus postage.

DOCUMENT TYPE: Research Report (143)

MAJOR DESCRIPTORS: *Computer Assisted Instruction; *Reading Comprehension; *Reading Improvement; *Reading Strategies

MAJOR IDENTIFIERS: *Main Idea; *Strategy Training

A study tested the relative effectiveness of four methods of teaching remedial reading students (grades 6 through 11) how to identify the main idea of expository paragraphs. Forty-seven students were divided according to treatment and were given the same pool of 125 paragraphs about geology and weather to read, and were given pretests and posttests. Treatments were as follows: (1) strategy training—tactics for identifying the topic and main idea of paragraphs, as well as metacognitive strategies for checking main idea hypotheses; (2) classification training—instruction and practice in classifying words, phrases, and sentences under appropriate topics; (3) a combination of classification and strategy training; and (4) practice only (control group). All instruction was carried out via the computer. The results indicated significant effects of strategy training on the students' ability to identify the main idea in paragraphs about the training content and in paragraphs about new content. Classification training showed positive effects on paragraphs about the training content, but the effect did not transfer to new content. Results suggest that comprehension strategies and metacognitive strategies can effectively improve remedial readers' abilities to identify the main idea of expository paragraphs.

ED297294

Correlation between Remedial Students and Learning Styles: Implications for Computer Assisted Instruction.

Wheeler, M. Candace

1988, 48p. Master's Thesis, Eastern Washington University.

EDRS PRICE - MF01/PC02 plus postage.

DOCUMENT TYPE: Thesis (042); Research Report (143)

MAJOR DESCRIPTORS: *Cognitive Style; *Computer Assisted Instruction; *Computer Software; *Remedial Reading

A study investigated the learning styles of remedial students and the implications for computer-assisted instruction. The subjects were 31 sixth-grade Chapter 1 students from a middle school in Idaho who did not have learning disabilities nor were candidates for special education. The subjects were given the Reading Style Inventory (RSI). Results indicated that all subjects had a strong to moderate kinesthetic preference and most had high visual strength. The implication is that computer software which emphasizes problem-solving and simulation will address the particular learning style of remedial readers. (One table of data and two figures are included, and 38 references are attached.)

Science

ED302189

"Beyond Einstein." A Case Study in Interactive Television.

Anderson, Thomas

Jun 1986, 25p. Paper presented at an Invitational Conference on Multimedia in Education (Cupertino, CA, June 19-20, 1986). In: *Learning Tomorrow: Journal of the Apple Education Advisory Council*, n3 p209-233 Spr 1987. For the complete journal, see ED 302 179.

EDRS PRICE - MF01/PC01 plus postage.

DOCUMENT TYPE: Journal Article (080); Conference Paper (150)

MAJOR DESCRIPTORS: *Computer Software; *Databases; *Instructional Design; *Multimedia Instruction; *Science Education; *Videodisks

MAJOR IDENTIFIERS: *Interactive Television

This paper describes the design principles for the development of an interactive media project in physics entitled "Beyond Einstein," which is based on the public television series, "The Creation of the Universe." Following a discussion of cognitive science concepts applicable to the development of interactive television, the development of a demonstration tape is detailed, noting that the information to be placed in the database includes short pieces of video, audio, and computer data as well as text. The possibility of using CD-I (Compact Disc-Interactive) as the medium for the project is considered. It is suggested that "Beyond Einstein" represents a first step in the development of information made transparent and attractive to the user, and that it is now necessary to explore in depth the question of whether the possibilities demonstrated in this project are worth further investment.

ED305036

Microcomputers in Secondary Science.

Baird, William E.

Education Service Center Region 13, Austin, TX.

[1984], 129p.

EDRS PRICE - MF01/PC06 plus postage.

DOCUMENT TYPE: Teaching Guide (052); Project Description (141)

MAJOR DESCRIPTORS: *Computer Assisted Instruction; *Computer Managed Instruction; *Courseware; *Microcomputers; *Science Teachers

The purpose of this training module is to introduce science teachers at the secondary level to effective applications of microcomputers for instruction and to provide information on the current state of science-related microcomputer courseware. Designed to provide for 12 presentation hours, the module is divided into seven sessions: (1) Realities and Aspirations; (2) Computer-Assisted Instruction and Computer-Managed Instruction (CAI and CMI); (3) Simulations, Tutorials, and the Use of Graphics; (4) Calculations, Analysis, and Workup of Data; (5) Collections of Experimental Data; (6) Problem Solving Strategies and Inquiry; and (7) Conclusions and Evaluation. The four sections of this document provide: (1) a rationale for the subject matter, an overview of the entire module, and suggestions for presentation; (2) notes for the presenter, including step-by-step procedures for organizing major concepts into sequential sections with overview, learner outcomes, lists of needed materials and equipment, and time requirements for each of the seven sessions; (3) materials for participants, including all of the handouts needed to present the entire training module; (4) instructional materials, including a short description of a videotape intended for use with the sixth session, and transparency masters and diskettes needed for presenting the module. The appendixes include a list of science courseware, useful addresses and sources of assistance, a certificate to be handed out to participants, and a listing of all of the programs on each of the diskettes intended for use with this module.

ED302422

Microcomputer Activities for the Teaching of Science and Thinking Skills in the Elementary School Grades 3-7. A Curriculum Development Project of the Project To Increase Mastery of Mathematics and Science (PIMMS).

Bengtson, Eileen G.; And Others

Wesleyan University, Middletown, CT.

Apr 1988, 50p. For other documents from PIMMS, see ED 302 423-425.

EDRS PRICE - MF01/PC02 plus postage.

DOCUMENT TYPE: Teaching Guide (052); Instructional Material (051)

MAJOR DESCRIPTORS: *Computer Assisted Instruction; *Courseware; *Elementary School

Science; *Science Activities; *Science Materials; *Scientific Methodology

The purpose of this project is to help elementary school teachers get started using the computer to aid the teaching and learning of many scientific concepts in a meaningful way. The authors have developed their own software package, "Elementary Science Activities," and have selected several commercially available software packages that are versatile, cost effective, and easy to use. This report includes reviews/descriptions and several activities for these programs. The teacher-developed software contains a "Rock Identification Key"; a "Needle Trees Key"; and "The Solar System." There are program reviews/descriptions for the commercial software "The Factory," and "The Pond"; and reviews/descriptions and activities for "The Incredible Laboratory," "MECC Graph," and "Science Tool Kit, Master Module." The format of these programs pairs readily available manipulatives with computer programs to develop logical thinking skills as they query and guide the student through the activities. The programs were selected to aid the development of logical thinking, pattern recognition, sequencing, and organization. They are self-testing and correcting, and help to promote self-motivation by incorporating fun, graphics, and sound into the lessons.

ED303362

Doing Science: Constructing Scientific Theories as an Introduction to Scientific Method. Scientific Theory and Method Project (STAMPS). Technical Report.

Chomsky, Carol; And Others

Educational Technology Center, Cambridge, MA.

Nov 1985; 93p.

EDRS PRICE - MF01/PC04 plus postage.

DOCUMENT TYPE: Project Description (141)

MAJOR DESCRIPTORS: *Cognitive Processes; *Computer Uses in Education; *Hypothesis Testing; *Science Instruction; *Scientific Methodology; *Secondary School Science

The Scientific Theory and Method Project (STAMPS) is concerned with students' understanding of two areas of science in secondary schools. One is understanding what a scientific theory is, and the other is understanding the methods used in conducting scientific research. In the science curriculum these topics are often described as the process of science as opposed to scientific facts. Students, along with learning about the content of the different scientific disciplines, need an emphasis on the scientific process as well. Two questions are considered concerning students engaging in various activities presented to them: (1) how do students think about these problems; and (2) what kinds of activities and materials are best suited for this kind of introduction to the scientific method? Three components of a unit dealing with these questions have been developed and piloted. The computer program "The King's Rule" was used to introduce hypothesis formation and testing. The program "The Scientific Method" was used to study experimental conditions and the effects of phenomena under investigation. The third unit experiments with natural language phenonema. The pilot program is presented along with excerpts and transcripts taken during trials of the program.

ED305251

An Evaluation of a Teacher-Enhancement Project on Educational Computing.

Ellis, James D.

Biological Sciences Curriculum Study, Colorado Springs.

Apr 1989, 51p. Interim report to the National Science Foundation for Year Two of ENLIST Micros II.

EDRS PRICE - MF01/PC03 plus postage.

DOCUMENT TYPE: Project Description (141); Research Report (143); Test, Questionnaire (160)

MAJOR DESCRIPTORS: *Computer Managed Instruction; *Computer Uses in Education; *Inservice Teacher Education; *Secondary School Science; *Teaching Methods

MAJOR IDENTIFIERS: *Concerns Based Adoption Model

The Biological Science Curriculum Study with support from others conducted a three-year project (ENLIST Micros II) to develop and test a model for implementing educational computing in science courses. Descriptive data on background characteristics, prior experience with microcomputers, and educational level of the leaders and new participants was gathered. Leaders and new participants evaluated the workshops and seminars using questionnaires. The project used the Concerns Based Adoption Model (CBAM) developed by the Research and Development Center for Teacher Education at the University of Texas as the approach to evaluating implementation. Leaders and new participants completed the Stages of Concern Questionnaire and the Microcomputer Use in

Science Teaching checklist as pretests and posttests to indicate their concerns about and degree of implementing microcomputers in science teaching. By the end of the second year 100 percent of the leaders and 84.6 percent of the new participants were using microcomputers to manage instruction and 92.3 percent of the leaders and 66.7 percent of the new participants indicated that their students were using microcomputers to learn science. The profiles of the leaders and new participants on the Stages of Concern Questionnaire changed from one typical of non-users toward one appropriate for users of an innovation.

ED303375

Promoting Changes in Children's Predictive Rules about Natural Phenomena: The Role of Computer-Based Modelling Strategies. Technical Report.

Frenette, Micheline

Educational Technology Center, Cambridge, MA.

Aug 1988, 200p.

EDRS PRICE - MF01/PC08 plus postage.

DOCUMENT TYPE: Research Report (143)

MAJOR DESCRIPTORS: *Computer Simulation; *Elementary School Science; *Misconceptions; *Physical Sciences; *Science Instruction; *Scientific Concepts

MAJOR IDENTIFIERS: *Density

Trying to change the predictive rule for the sinking and floating phenomena, students have a great difficulty in understanding density and they are insensitive to empirical counter-examples designed to challenge their own rule. The purpose of this study is to examine the process whereby students from sixth and seventh grades relinquish their predictive rule in the face of counter-examples and to examine two variables that might affect their interpretation of counter-examples: the use of a computer simulation as conceptual referent, and prior awareness of an alternative concept of density. Two computer programs, "Weight and Density" and "Sink the Raft," were used as the treatment materials. Results show two main effects from the two variables. However, none of the differences in the groups remained by a posttest administered six to seven weeks after the experimental sessions. Appendices include 13 figures; 35 tables; scripts for introduction, model guided observation, and observation without the computer model; outline of treatments; a paper and pencil test; and scoring criteria.

ED306130

Toward a Unified Conception of Thinking: Prediction within a Cognitive Science Perspective.

Good, Ronald G.

1989, 22p. Paper presented at the Annual Meeting of the National Association for Research in Science Teaching (62nd, San Francisco, CA, March 30-April 1, 1989), and at a University of British Columbia, Department of Social and Natural Science Symposium "Toward a Unified Conception of Thinking" (Victoria, British Columbia, Canada, April 4-5, 1989).

EDRS PRICE - MF01/PC01 plus postage.

DOCUMENT TYPE: Project Description (141); Position Paper (120); Conference Paper (150)

MAJOR DESCRIPTORS: *Artificial Intelligence; *Cognitive Processes; *Cognitive Psychology; *Prediction; *Science Instruction

MAJOR IDENTIFIERS: *Philosophy of Science; *Science Education Research

This paper draws from several disciplines to provide a foundation for making progress toward a unified conception of thinking in science education. Areas covered include: (1) the philosophy of science (discussing contextual realism); (2) cognitive psychology (describing development of scientific thinking skills); and (3) artificial intelligence (including machine learning). It is suggested that the mechanism of prediction should be incorporated into current learning and instructional theories in science education. Finally, research results exploring the role of prediction as part of an instructional strategy are discussed. A total of 28 references is appended.

ED302425

A Guide to Computer Use by the Science Teacher. A Curriculum Development Project of the Project To Increase Mastery of Mathematics and Science (PIMMS).

Guertin, Arthur; And Others

Wesleyan Univ., Middletown, CT.

Oct 1987, 78p. For other documents from PIMMS, see ED 302 422-425.

EDRS PRICE - MF01/PC04 plus postage.

DOCUMENT TYPE: Teaching Guide (052)

MAJOR DESCRIPTORS: *Computer Assisted Instruction; *Computer Uses in Education; *Elementary School Science; *Science Activities; *Science Materials; *Scientific Methodology

This guide explains ways in which the computer can be used in the science classroom and laboratory. Further, it suggests many resources that can be tapped to help teachers initiate and improve their own programs. Chapters include: (1) "The Computer as a Tool for Student Inquiry"; (2) "The Computer as a Tool for Teachers"; (3) "The Computer as an Instructor"; (4) "Hardware Recommendations"; and (5) "Glossary." The appendices include examples of commercial microcomputer based laboratory (MBL) products; four MBL activities for earth science, biology, chemistry and physics; sources of MBL products; and an MBL bibliography.

ED309050

Microcomputers in the Science Classroom. ERIC/SMEAC Science Education Digest No. 3, 1988.

Helgeson, Stanley L.

ERIC Clearinghouse for Science, Mathematics, and Environmental Education, Columbus, Ohio.

1988, 4p. For other 1988 science digests see ED 309 048-049.

AVAILABLE FROM: ERIC/SMEAC, The Ohio State University, 1200 Chambers Road, 3rd Floor, Columbus, OH 43212 ($1.00 single copy; ordered in sets by year and area, $3.00).

EDRS PRICE - MF01/PC01 plus postage.

DOCUMENT TYPE: ERIC Product (071); Review Literature (070)

MAJOR DESCRIPTORS: *Computer Assisted Instruction; *Computer Uses in Education; *Laboratories; *Microcomputers; *Science Activities; *Science Instruction

This ERIC Digest presents a brief description of some applications and findings of the microcomputer in science classrooms. It is suggested that microcomputer simulations are at least as effective as hands-on experiences for some cognitive outcomes and may in fact enhance these outcomes when the simulations are sequenced to follow hands-on instruction. Skills such as graphing appear to be positively influenced by microcomputer-based experiences, although the apparently critical nature of a delay between the input of data and its corresponding graphic display should be noted. While sex difference in achievement may not have been eliminated by the use of the microcomputer, instances of equal performance have been noted. In the affective domain, both student attitudes and interest seem to be positive regarding the use of microcomputers in science instruction. Includes 10 references.

ED297943

Developing and Validating Science Education Videodiscs.

Hofmeister, Alan M.; And Others

1988, 39p.

EDRS PRICE - MF01/PC02 plus postage.

DOCUMENT TYPE: Project Description (141)

MAJOR DESCRIPTORS: *Formative Evaluation; *Material Development; *Program Development; *Secondary School Science; *Technological Advancement; *Videodisks

The development of videodiscs for science instruction in public schools requires a recognition of the unique characteristics of the public school environment and sensitivity to the persistent problems associated with science content instruction. This report discusses the conceptualization, development, and formative evaluation of a series of science education videodiscs. Three major concerns addressed by the development of the "Core Concepts" videodisc program included: (1) a concern for the instructional setting; (2) an emphasis on courseware rather than hardware; and (3) a willingness to make the necessary "front-end" investment. The discs were designed to enhance the efforts of teachers working in both individual and group instructional settings. In presenting the content, particular attention was given to problems associated with the use of terminology and fragmentation of information. The formative data indicated that videodisc programs can enhance the effectiveness of teachers and substantively impact the student achievement and attitudes.

ED300203

Computer Lab Modules as Problem Solving Tools. Final Report.

Ignatz, Mila E.; Ignatz, Milton

Florida A&M University, Tallahassee.

25 Sep 1987, 29p.

EDRS PRICE - MF01/PC02 plus postage.

DOCUMENT TYPE: Project Description (141)

MAJOR DESCRIPTORS: *Academically Gifted; *Black Students; *Computer Software; *Educational Improvement; *Educational Technology; *Secondary School Science

There are many problems involved in upgrading scientific literacy in high schools: poorly qualified teachers, the lack of good instructional materials, and economic and academic disadvantages all contribute to the problem. This document describes a project designed to increase the opportunities available to the high school science student to experience science in an exciting and nonthreatening environment, to provide students with interactive experiences to maximize the learning of science processes and concepts, and to increase interest in science and technology among black students. The report gives the descriptions of 21 courseware packets consisting of simulations and interactive videotape modules designed to promote knowledge processing and application strategies in physics, chemistry, trigonometry, and physical science. In addition, the Talented Youth for the Physical Sciences and Engineering (TYPSE) program is discussed. This program is designed to identify and encourage talented minority students in grades 8 through 10. An evaluation of the TYPSE program is provided. An appendix includes a student evaluation form for the TYPSE program.

ED304309

Teaching Scientific Methodology through Microcomputer Simulations in Genetics. Final Project Report.

Kellogg, Ted; Latson, Jon

Educational Technology Center, Cambridge, MA.

Jul 1986, 39p.

EDRS PRICE - MF01/PC02 plus postage.

DOCUMENT TYPE: Research Report (143)

MAJOR DESCRIPTORS: *Computer Simulation; *Computer Uses in Education; *Genetics; *Scientific Methodology; *Secondary School Science; *Teaching Methods

There are two major concerns about the teaching of high school biology. One is the degree to which students memorize laws, facts, and principles, and the second involves the role of the classroom teacher. These aspects result in a discrepancy between the theory and practice of science education. The purpose of this report is to provide: (1) a recapitulation of the targets causing the difficulty, the rationale, and the research questions; (2) a chronology of 18 months of work; (3) descriptions of the instructional material, teacher training, software, and experiments performed; (4) research findings; and (5) provisional conclusions and relevant issues concerning the research. Teachers involved in the study stated that they would use the technique again. Pilot teachers admitted feeling more comfortable using the materials in teaching the second class than their initial class. Most teachers found that the higher level of thinking required and the use of the scientific method made the materials more appealing. About one in eight of the teachers preferred alternate materials or teaching strategies to this method. The appendices include suggested revisions of software, tally sheets, homework assignments, teacher pre/post questionnaires, a student post questionnaire, and student pre/post tests. A reference list is also cited.

ED303352

Curriculum Reformulation: Incorporating Technology into Science Instruction.

Linn, Marcia C.; Songer, Nancy Butler

1988, 53p. Paper presented at the Annual Meeting of the American Educational Research Association (New Orleans, LA, April 1988).

EDRS PRICE - MF01/PC03 plus postage.

DOCUMENT TYPE: Conference Paper (150); Research Report (143)

MAJOR DESCRIPTORS: *Computer Assisted Instruction; *Computer Uses in Education; *Curriculum Development; *Laboratories; *Science Instruction; *Secondary School Science

MAJOR IDENTIFIERS: *Microcomputer Based Laboratory

To increase the connection between educational research and educational practice, a process called "curriculum reformulation" was used to incorporate recent advances in research on learning and instruction into science classroom experiences. The cognitive demands of a thermodynamics curriculum were successively refined while maintaining the same microcomputer based laboratory (MBL) software and the same basic experiments. The 13-week curriculum was reformulated four times, and each version was evaluated using the same criteria. Overall, a four- to ten-fold increase in student learning (depending on the criteria applied) was achieved as a result of reformulations based on cognitive research. The results showed that some suggestions from research offer promise for use in realistic settings and that other suggestions such as "offer multiple representations" are wrong or incomplete when applied in realistic settings. Includes a bibliography of 75 references.

ED308853

Perspectives for Research in Science Teaching: Using the Computer as Laboratory Partner.

Linn, Marcia C.

1988, 22p. A version of this paper was presented at the European Conference for Research on

Learning (2nd, Tubingen, West Germany, September 19-22, 1987).
EDRS PRICE - MF01/PC01 plus postage.
DOCUMENT TYPE: Research Report (143); Conference Paper (150)
MAJOR DESCRIPTORS: *Computer Assisted Instruction; *Instructional Design; *Instructional Effectiveness; *Problem Solving; *Science Experiments
MAJOR IDENTIFIERS: *Computer as Laboratory Partner Project; *Reciprocal Teaching

Research offers important suggestions concerning science curriculum design, and real-time data collection technology offers great opportunities. This paper discusses how recent increases in understanding the nature of the learner and the process of instruction combined with recent advances in technology might lead to improved science instruction. Results from the Computer as Lab Partner project illustrate how curriculum developers might take advantage of these understandings to create effective materials for science education. (27 references)

ED303353

Sex and Ethnic Differences in Middle School Mathematics, Science and Computer Science: What Do We Know? A Report.

Lockheed, Marlaine E.; And Others
Educational Testing Service, Princeton, N.J.
May 1985; 194p.
AVAILABLE FROM: Educational Testing Service, CC6121, Princeton, NJ 08540 ($6.50).
EDRS PRICE - MF01/PC08 plus postage.
DOCUMENT TYPE: Project Description (141); Research Report (143)
MAJOR DESCRIPTORS: *Computer Science Education; *Ethnic Groups; *Mathematics Education; *Minority Groups; *Science Education; *Sex Differences
MAJOR IDENTIFIERS: *Ethnic Differences

During the past several years considerable national-level attention has been focused on the state of American public education in mathematics, science and technology. There is, among the several policy reports, substantial agreement that student achievement levels in mathematics are lower than is desirable and the opportunity to learn mathematics, science and technology is at present not fairly and evenly provided to all students. In particular, large numbers of minority youngsters and those who go to inner-city schools are below grade level in mathematics achievement by grade five. Girls, too, show disparities in interest, participation and achievement, but for different reasons. The situation for minority girls is even more complex. The goal of this study was to conduct a comprehensive review of the research and intervention literature on math, science and computer learning among girls, minority students and inner-city students in grades four through eight. Chapters concern: (1) the studies used in this report; (2) differences and similarities in participation; (3) differences and similarities in performance; (4) factors related to performance and participation; (5) intervention programs; and (6) summary and recommendations. Appendices include lists and tables of meta-analysis, a directory of intervention programs, and a bibliography of 290 references on this topic.

ED301469

A Commentary on Gender Differences.

Morrow, Dallas; Goertzen, Sandi
Manitoba Department of Education, Winnipeg. Planning and Research Branch.
Dec 1986, 13p.
EDRS PRICE - MF01/PC01 plus postage.
DOCUMENT TYPE: Research Report (143)
MAJOR DESCRIPTORS: *Computer Literacy; *Females; *Science Instruction; *Sex Differences; *Teaching Methods
MAJOR IDENTIFIERS: *Manitoba

The development of knowledge and skills in the areas of mathematics, science, and computers is considered to be important for all students, both males and females. These subjects are prerequisites for many postsecondary education programs. Some of the most highly paid sectors of the labor market are those which require math, science, and computer knowledge. The importance of these fields in a person's everyday life should not be underestimated. Women tend to be under-represented in these fields. This paper provides an overview of this issue and a description of what is known about the situation in the province of Manitoba. Discussions in this report center around enrollment, achievement, and social factors. A list of six suggestions to improve the situation are included.

ED305220

The Best Science Books & A-V Materials for Children.

O'Connell, Susan M., Ed.; And Others

American Association for the Advancement of Science, Washington, D.C.

1988, 343p. Items selected from *Science Books & Films* magazine.

Report No.: ISBN-0-87168-316-4

AVAILABLE FROM: AAAS Books, P.O. Box 753, Waldorf, MD 20604 ($20.00, $16.00 for AAAS members).

EDRS PRICE - MF01 plus postage. PC not available from EDRS.

DOCUMENT TYPE: Bibliography (131)

MAJOR DESCRIPTORS: *Audiovisual Aids; *Computer Software; *Computer Uses in Education; *Elementary School Science; *Mathematics; *Sciences

Some scientists and science educators believe that the most effective strategy for raising science literacy among future workers and voters is to focus on the youngest members of the public. The reviews in this publication were undertaken to increase public understanding and appreciation of the importance and promise of the methods of science in human progress. This publication is directed towards librarians, teachers, and parents who are concerned about science information and education for children 5 through 12 years of age and covers science and mathematics books, films, filmstrips, and videocassettes. These materials cover the life and physical sciences, mathematics, engineering and technology, medicine, and the social and behavioral sciences. A wide range of topics is covered including science museums, environmental problems, careers in science, oceanography, insect culture, robots, and the ancient world. Audiovisual materials include such diverse topics as energy and resources, chemical interactions, meteorology, aquatic environments, zoological sciences, medicine, and engineering. The indexes list authors, titles and subjects, series titles, and distributors. Availability and cost information are provided in the annotations.

ED307136

Computer Usage by Physics Teachers and Their Students.

Prelle, Walter V.; Hiatt, Diana Buell

1989, 38p. Paper presented at the Annual Meeting of the American Educational Research Association (San Francisco, CA, March 27-31, 1989).

EDRS PRICE - MF01 plus postage. PC not available from EDRS.

DOCUMENT TYPE: Research Report (143); Test, Questionnaire (160); Conference Paper (150)

MAJOR DESCRIPTORS: *Computer Uses in Education; *Physics; *Science Equipment; *Science Teachers; *Secondary School Science

The purposes of this study were to determine how experienced high school physics teachers were in using computers, how computers were being used for high school physics instruction, what the teachers perceived the use of computers in their physics classes should be, and what the enabling and constraining factors were in developing the use of computers. A total of 319 high school physics teachers who were members of the American Association of Physics Teachers responded to a survey mailed to 400 teachers for a return rate of 79.8 percent. Conclusions based on the results of the survey were: (1) the teachers averaged seven years computer experience but the quality was questionable; (2) the number of computer systems available was insufficient to support use and restricted the teachers' selection of applications for physics instruction; (3) the teachers wanted to use all of the computer applications more frequently; and (4) the enabling factors were quantity of computer systems, software, and preparation time and the constraining factors were lack of funds for purchasing, having time to prepare for use, and having computer systems available. The survey instrument is appended.

ED307153

Computers To Enhance Science Education: An Inservice Designed To Foster Classroom Implementation.

Roseman, Jo Ellen; Brearton, Mary Ann

Mar 1989, 32p. Paper presented at the Annual Meeting of the National Association for Research in Science Teaching (62nd, San Francisco, March 30-April 1, 1989).

EDRS PRICE - MF01/PC02 plus postage.

DOCUMENT TYPE: Project Description (141); Conference Paper (150)

MAJOR DESCRIPTORS: *Computer Uses in Education; *Inservice Teacher Education; *Instructional Improvement; *Science Programs; *Science Teachers; *Secondary School Science

This paper describes an inservice project designed by The Johns Hopkins University and the Baltimore City Public School System to help teachers acquire the skills necessary to effectively integrate computer technology into science instruction. From 1986 to 1988 the project was implemented in the large urban Baltimore school system with 100 teachers who ranged in computer literacy from novice to experienced user. Components of the inservice design included teacher training, acquisition of hardware and software, development of model lessons, and the establishment of an extensive and diverse support system. The nature and extent of implementation of that training is currently being evaluated. Project staff are closely monitoring both personal and classroom use of the computer by those trained. Preliminary results indicate that 90% of trained teachers are using computers to manage instruction, and 75% are using computers in their science classrooms. Included are the classroom observation form and the computer usage questionnaire.

ED308838

Teaching Science Using Interactive Videodisc: Results of the Pilot Year Evaluation of the Texas Learning Technology Group Project.

Savenye, Wilhelmina C.; Strand, Elizabeth

Feb 1989, 20p. In: *Proceedings of Selected Research Papers presented at the Annual Meeting of the Association for Educational Communications and Technology (Dallas, TX, February 1-5, 1989)*. For the complete proceedings, see ED 308 805.

EDRS PRICE - MF01/PC01 plus postage.

DOCUMENT TYPE: Research Report (143); Conference Paper (150)

MAJOR DESCRIPTORS: *Computer Assisted Instruction; *Curriculum Development; *Interactive Video; *Physical Sciences; *Pilot Projects

A computer-based interactive video was developed in 1985 for the Texas Learning Technology Group (TLTG) Project, a partnership formed by the Texas Association of School Boards, the National Science Center Foundation, and 12 Texas school districts in response to the national and state crisis in science, math, and technology education. A pilot test of a semester-long high school chemistry curriculum delivered by TLTG was conducted during the 1987-1988 school year, in part to investigate teacher attitudes and teacher implementation behavior. Twenty-six teachers participated in the interactive videodisc (IVD) study, which also made use of records of 2,297 students and achievement data collected from a sample of the students (N = 338). The major findings revealed that IVD students generally achieved higher scores than non-IVD students; IVD students indicated a greater degree of intention to enroll in an elective science course than control students; most teachers liked using the curriculum and found it easier to teach than the traditional curricula; all teachers used supplemental materials in conjunction with the curriculum; and all teachers felt that their students had learned more using the TLTG curriculum than they had learned in previous years. Both videotaped classroom observations of the TLTG curriculum and staff visits to all of the school districts using the curriculum were made during the pilot year. A new evaluation plan has been formulated for the field test year of the TLTG evaluation (1988-1989), and data are being collected on the actual on-site implementation of the TLTG field test curriculum. (4 references)

ED307115

Building High School Science Department Inventory Records Using the Appleworks Data Base Subprogram and Apple IIe or GS Computers.

Schlenker, Richard M.

Dependents Schools (DOD), Washington, DC. Pacific Region.

Jun 1988, 28p.

EDRS PRICE - MF01/PC02 plus postage.

DOCUMENT TYPE: Computer Programs (101); Non-Classroom Material (055)

MAJOR DESCRIPTORS: *Computer Uses in Education; *Database Management Systems; *Orientation Materials; *Science Laboratories

MAJOR IDENTIFIERS: *Apple II

This manual was developed for use as a "how to" training device and provides a step-by-step introduction to using AppleWorks in the database mode. Instructions are given to prepare the original database with the headings of the user's choice. Inserting information records in the new database is covered, along with changing the layout of the database after several records have already been entered. Each step of the entire operation is accompanied by views of the screen. The guide can be used with either Apple IIe or IIGS computers with dual disk drives and an 80-column card. This instruction manual uses AppleWorks version 1.3.

ED300211

Buttons, Computers and Data Base: Integrating Computers into Science Programs Using AppleWorks.

Schlenker, Richard M.

Dependents Schools (DOD), Washington, DC. Pacific Region.

Oct 1988, 30p.

EDRS PRICE - MF01/PC02 plus postage.

DOCUMENT TYPE: Teaching Guide (052)

MAJOR DESCRIPTORS: *Computer Assisted Instruction; *Databases; *Data Collection; *Science Activities; *Secondary School Science

This document suggests that the activity described can be used from kindergarten through adulthood. The activity involves measuring, counting, categorizing, group processes, construction of computer database files, construction and/or use of data tables, data gathering, making observations, the study of shape, the computation of area, the computation of volume, the manipulating and printing of computer files and the evaluation of data trends. For older students and adults, writing skills and/or scientific writing may be added to the list. One goal of the activity is to illustrate how easily computers can be integrated into a science program. The activity uses rulers, a random collection of buttons, and the AppleWorks database. After gathering as much data as possible in some organized fashion, students work individually on the computer. Once the data gathering phase has been completed, a computer data base file is built, data entered in the file and the data base manipulated as data trends are sought. Instructions for the construction of the data base are attached, comprising three-fourths of the paper.

ED300210

Jars and Water: Controlling Variables in the Study of Sound Using a Data Table and a Computer Data Base.

Schlenker, Richard M.

Dependents Schools (DOD), Washington, DC. Pacific Region.

Oct 1988, 39p.

EDRS PRICE - MF01/PC02 plus postage.

DOCUMENT TYPE: Teaching Guide (052)

MAJOR DESCRIPTORS: *Acoustics; *Computer Assisted Instruction; *Elementary School Science; *Science Instruction; *Secondary School Science

This document advances the premise that the scientific method to identify cause-effect relationships is undoubtedly the single most important factor in the geometric expansion of scientific advances evidenced thus far during the 20th century. To understand these advances and to make educated decisions concerning them, the citizenry must be scientifically literate. It is further argued that to be scientifically literate, individuals must understand the scientific process. The materials provide an example of an investigation which employs the scientific method to learn about some aspects of sound. Once data are collected, as a result of student investigation, they are computerized as a method of identifying trends. In the investigation students use active inquiry, group processes and Piagetian principles to determine how various factors interact to produce the pitch one hears. The investigation is an extension of the one where all jar or glass sizes are identical and, therefore, the glass size variable automatically controlled. A set of instructions for developing AppleWorks data base computer files (comprising four-fifths of the document) is attached.

ED303374

Computer Networking for Collegial Exchange among Teachers: A Summary of Findings and Recommendations. Technical Report.

West, Mary Maxwell; McSwiney, Eileen

Educational Technology Center, Cambridge, MA.

Jan 1989, 14p.

EDRS PRICE - MF01/PC01 plus postage.

DOCUMENT TYPE: Research Report (143)

MAJOR DESCRIPTORS: *Computer Networks; *Information Transfer; *Network Analysis; *Science Teachers; *Secondary School Science; *Teleconferencing

Asynchronous computer-based conferencing offers several unique capabilities as a medium. Participants can read and write messages at whatever time is convenient for them, groups can interact even though participants are geographically separated, and messages are available to readers almost instantly. Because the medium has served for over a decade in mainframe computing to support a sense of professional community among geographically dispersed groups in business and academia, researchers at the Educational Technology Center (ETC) examined whether computer conferencing could help solve a well-documented problem among secondary science teachers, namely, their isolation both from ongoing developments in science and science teaching and from colleagues with whom they might exchange ideas about the teaching of science. This document discusses the results of the first year of operation of the Science Teacher's Network; expectations, actual usage, network topics, factors which promote discussion and implications for network design and management.

ED303363

Talking about Teaching, by Writing: The Use of Computer-Based Conferencing for Collegial Exchange among Teachers. Technical Report.

West, Mary Maxwell; And Others

Educational Technology Center, Cambridge, MA.

Jan 1989, 116p. Pages with light or small type may not reproduce well.

EDRS PRICE - MF01/PC05 plus postage.

DOCUMENT TYPE: Research Report (143)

MAJOR DESCRIPTORS: *Computer Networks; *Educational Technology; *Laboratory Technology; *Network Analysis; *Science Teachers; *Secondary School Science

The goal of the Educational Technology Center (ETC) Computer-based Conferencing Project has been to explore the potential of computer-mediated communication to support teachers in collegial exchange about their subject and practice, and to develop recommendations for future applications and management of such conferences. The purposes of this study were to describe the kinds of exchange in our own networks; to identify influences on one particular kind of exchange—discussion of teaching practice; to draw upon these findings and information about other similar networks; and to develop recommendations about choice and design of future applications of computer-based conferences for teachers. Discussions include: (1) research design and methods; (2) descriptions of the Science Teachers' Network and the Laboratory Sites Network; (3) a comparison of the two networks; and (4) recommendations for common interest networks.

ED303365

Can Models Foster Conceptual Change? The Case of Heat and Temperature. Technical Report.

Wiser, Marianne; And Others

Educational Technology Center, Cambridge, MA.

May 1988, 158p. Drawings type may not reproduce well.

EDRS PRICE - MF01/PC07 plus postage.

DOCUMENT TYPE: Research Report (143)

MAJOR DESCRIPTORS: *Computer Uses in Education; *Laboratory Procedures; *Misconceptions; *Science Instruction; *Secondary School Science; *Thermodynamics

The target of difficulty of the Educational Technology Center (ETC) Heat and Temperature Group is basic thermal physics, particularly the differentiation between heat and temperature. High school teachers often find that thermal concepts are very difficult for their students to master and attribute students' difficulties at least in part to the failure to differentiate between heat and temperature. This failure would indeed account for the students' poor learning, since most thermal variables, laws, and principles are based on the differentiation and relation between heat and temperature. This group's curriculum has used microcomputers as laboratory tools: Microcomputer-Based Laboratories (MBL) allow students to collect, display, and summarize data collected from the "real world," while with Computer Laboratory Simulations students watch "ideal" experiments on the screen, setting parameters, not collecting data. Classroom interventions have helped students at the problem-solving level: students taught with microcomputers were better than control students at solving quantitative problems of the type given in science tests, but no evidence was found that the computer-based curriculum facilitated conceptual change. This report summarizes past work and the development of computer conceptual models, and reports the results of a pilot study conducted to test the models.

ED303367

The Differentiation of Heat and Temperature: An Evaluation of the Effect of Microcomputer Models on Students' Misconceptions.

Wiser, Marianne; Kipman, Daphna

Educational Technology Center, Cambridge, MA.

Apr 1988, 55p. Draft article of a paper presented at the Annual Meeting of the American Educational Research Association (New Orleans, LA, April 5-9, 1988).

EDRS PRICE - MF01/PC03 plus postage.

DOCUMENT TYPE: Research Report (143)

MAJOR DESCRIPTORS: *Computer Assisted Instruction; *Heat; *Misconceptions; *Science Instruction; *Secondary School Science; *Temperature

MAJOR IDENTIFIERS: *Laboratory Interfacing

This paper describes the characterization of a student's framework of heat and temperature, and the development of a microcomputer-based laboratories (MBL) intervention program for grade 9 and grade 11 students. The report presents the results of classroom study, including interview questions and answers and pretest/posttest, from experimental and control groups. In the posttest, the students in the experimental group displayed a firmer grasp than the control group students of the various thermal concepts, laws, and principles, both at the theoretical and applied levels. Their knowledge formed a more integrated whole, and they showed fewer remaining misconceptions. Finally, they were more able to relate phenomena at the macro level to molecular events.

ED303364

Collaborative Research Goes to School: Guided Inquiry with Computers in Classrooms. Technical Report.

Wiske, Martha Stone; And Others

Educational Technology Center, Cambridge, MA.

Dec 1988, 80p.

EDRS PRICE - MF01/PC04 plus postage.

DOCUMENT TYPE: Project Description (141)

MAJOR DESCRIPTORS: *Computer Uses in Education; *Curriculum Design; *Secondary School Mathematics; *Secondary School Science; *Theory Practice Relationship

MAJOR IDENTIFIERS: *Collaborative Research

Twin aims—to advance theory and to improve practice in science, mathematics, and computing education—guided the Educational Technology Center's (ETC) research from its inception in 1983. These aims led ETC to establish collaborative research groups in which people whose primary interest was classroom teaching and learning, and researchers concerned primarily with developing and testing theory, would keep each other honest. Several such groups identified targets of difficulty in the K-12 science, mathematics, and programming curricula and proceeded to develop experimental approaches including new technologies to improve teaching of these conceptually difficult topics. Most groups began with close observations of individual students and progressed to design materials and activities for teaching experiments which they conducted first with small groups and then with whole classrooms. Three of ETC's research groups had the following proposals: (1) using microcomputer based laboratory equipment and other technologies to teach students about heat and temperature; (2) infusing a programming "metacourse" into introductory classes in BASIC; and (3) teaching with the "Geometric Supposers" to incorporate inductive reasoning into traditional geometry courses. Included are goals, approaches, and implementation requirements of the innovations; discussion of the laboratory sites; and findings for introducing and integrating new technologies.

ED302409

Computer Resources for Schools: Notes for Teachers and Students. Educational Activities Kit.

Computer Museum, Boston, MA.

Oct 1988, 29p. Photographs and drawings may not reproduce well.

SPONSORING AGENCY: Massachusetts Council on the Arts and Humanities, Boston.

AVAILABLE FROM: Educational Coordinator, The Computer Museum, 300 Congress Street, Boston, MA 02210 ($5.00 postpaid).

EDRS PRICE - MF01/PC02 plus postage.

DOCUMENT TYPE: Non-Classroom Material (055); General Reference (130)

MAJOR DESCRIPTORS: *Computer Literacy; *Computers; *Computer Science Education; *Exhibits; *Resource Centers; *Secondary School Science

MAJOR IDENTIFIERS: *Computer Museum MA

This kit features an introduction to the Computer Museum, a history of computer technology, and notes on how a computer works including hardware and software. A total of 20 exhibits are described with brief questions for use as a preview of the exhibit or as ideas for post-visit discussions. There are 24 classroom activities about the history and work of computers, computers in daily life, and post-visit activities. A list of computer education resources in Massachusetts, Connecticut, Maine, New Hampshire, and Vermont is provided, along with a list of computer related publications that can be used as reference information. A glossary of computer terminology is also included.

ED307843

Physical Science: Discovery through Interactive Technology. Status and Evaluation.

Texas Learning Technology Group, Austin.

[Feb 1989], 19p.

EDRS PRICE - MF01/PC01 plus postage.

DOCUMENT TYPE: Research Report (143)

MAJOR DESCRIPTORS: *Courseware; *Instructional Effectiveness; *Interactive Video; *Program Evaluation; *Science Instruction

This report profiles the development, implementation, and evaluation of an interactive videodisc-based (IVD) program, Physical Sciences: Discovery through Interactive Technology. Developed by the Texas Learning Technology Group (TLTG), the program is a comprehensive, 160-hour, two-semester curriculum for secondary school students that integrates teacher/student interactions, teacher demonstrations, and traditional wet labs with an interactive videodisc instructional delivery system. The courseware is designed as a teaching tool and consists of 15 videodisc sides, accompanying software, Teacher Resource Guide, Student Manual, and Assessment Program. Teacher input was solicited with regard to instructional design, and teacher training was a major component of program development. The chemistry semester of the courseware was pilot tested during the 1987-88 school year with 2,000 students in 12 school districts. Evaluation focused on student achievement and interest. On the average, students enrolled in the interactive videodisc program reached higher levels of achievement then students in a traditional class. Differences were greatest between low-ability students in the interactive videodisc program and in the traditional class. Students enrolled in the program expressed a more positive intention of taking additional science classes as electives than did students in traditional classes. TLTG is a partnership among the Texas Association of School Boards, 12 school districts, and the National Science Center Foundation, Inc.

Social Studies

ED302187

Grapevine: An Excursion into Steinbeck Country.

Campbell, Robert; Hanlon, Patricia

Jun 1986, 23p. Paper presented at an Invitational Conference on Multimedia in Education (Cupertino, CA, June 19-20, 1986). In: *Learning Tomorrow: Journal of the Apple Education Advisory Council*, n3 p169-191 Spr 1987. For the complete journal, see ED 302 179.

EDRS PRICE - MF01/PC01 plus postage.

DOCUMENT TYPE: Journal Article (080); Conference Paper (150)

MAJOR DESCRIPTORS: *Computer Assisted Instruction; *Databases; *Instructional Development; *Multimedia Instruction; *Social History; *United States Literature

MAJOR IDENTIFIERS: *Steinbeck (John)

A high school teacher and a librarian are collecting and analyzing material in every medium for teaching John Steinbeck's novel, "The Grapes of Wrath," including the political and social history of the 1930s—altogether some 33 topic headings touched upon in the novel and in about 54 related works: books, films, television documentaries, still photographs, record albums and sound tapes, filmstrips, magazine and newspaper articles, and more. These are being linked and indexed by topic to provide an extensive and interesting educational resource and an interactive teaching tool, the Grapevine. This project will reflect the perspectives of a classroom teacher teaching the novel, a high school librarian, and an educational technologist. When the database is completed, teachers will have an extensive body of teaching material linked by topic, which they will be able to edit, modify, add to, and rearrange. In its ultimate stage of development, the system will permit a teacher to manipulate and integrate text, still and moving pictures, and sound in order to create multimedia documents. The developers of this system need a database program that will allow them to make many links from a single piece of information; create an index for use in searching, browsing, and manipulating text; and provide an interface with CD-ROM. They also need an authoring system that will allow the user to add, change, and link materials, and copyright issues will have to be worked out.

ED306946

What Happens When a School Starts Using a Microcomputer Laboratory? The Impact of a Science and Social Science Microcomputer Program on the Structure and Functioning of a High School. Technical Report 89-4.

Cline, Hugh F.

Educational Technology Center, Cambridge, MA.

Jan 1989, 28p.

EDRS PRICE - MF01/PC02 plus postage.

DOCUMENT TYPE: Research Report (143)

MAJOR DESCRIPTORS: *Microcomputers; *Organizational Change; *School Organization; *Social Studies; *Systems Approach; *Teaching Methods

MAJOR IDENTIFIERS: *Systems Thinking and Curriculum Innovation Proj

The first report of an ongoing case study examining the impact of using a laboratory of microcomputers as a tool for teaching science and social science courses in a high school, this paper reports on a sociological investigation of the organizational change in the structure and functioning of the school brought about by the introduction of the microcomputer laboratory. Introductory materials include a brief introduction to the systems thinking approach which underlies the STACI (Systems Thinking and Curriculum Innovation) project and a brief review of the sociological research literature on the impact of technology on formal organization with particular reference to schools. The participating high school where the study was conducted—the Brattleboro Union High School in Vermont—and the methods employed are then described. The report concludes with discussions of the organizational changes resulting from the introduction of systems thinking as detected to date, and policy implications of these findings that are appropriate for promoting effective use of computer based technologies in schools. (21 references)

ED307206

Philosophy of Computer Use in the Social Studies.

Ediger, Marlow

30 Mar 1989, 13p.

EDRS PRICE - MF01/PC01 plus postage.

DOCUMENT TYPE: Teaching Guide (052); Review Literature (070)

MAJOR DESCRIPTORS: *Computer Assisted Instruction; *Computer Software; *Educational Philosophy; *Educational Theories; *Social Studies; *Teacher Characteristics

Four philosophies of computer use in the social studies field are discussed, each representing a unique school of thought in teaching and learning. They are idealism, realism, experimentation, and existentialism. Idealists believe in an idea-centered social studies curriculum. Tutorial programs, carefully selected to achieve relevant goals, may well present subject matter to students in a logical sequence. Realism stresses that one can know the real world as it truly is. Teachers adhering to realism as an educational philosophy select learning opportunities for students to attain precise objectives. After completing the software program, teachers measure if students have/have not been successful in goal attainment. Experimentalism stresses a problem-solving procedure, for which a flexible model is presented. Software must assist students to secure knowledge directly related to the problem, which should be life-like and real. Existentialist social studies teachers advocate students learning to choose and make decisions. A learning center approach, in which students select desired tasks and software programs, while omitting those not having a perceived purpose, might well emphasize existentialist tenets. The student is responsible for his/her choices. A second plan involves student-teacher planning of objectives, learning opportunities, and appraisal procedures. Students might choose which software packages to use in a given unit. Under any philosophy, software should be instrumental to problem solving in the social studies. Criteria for software selection are presented, as is a 7-item bibliography.

Vocational Education

ED300677

Ohm's Law and Solar Energy. Courseware Evaluation for Vocational and Technical Education.

Gates, Earl; And Others

Ohio State University, Columbus. National Center for Research in Vocational Education.

3 May 1987, 9p. For the basic evaluation form, see ED 244 058.

SPONSORING AGENCY: Office of Vocational and Adult Education (ED), Washington, DC.

EDRS PRICE - MF01/PC01 plus postage.

DOCUMENT TYPE: Test, Questionnaire (160)

MAJOR DESCRIPTORS: *Computer Software Reviews; *Courseware; *Electricity; *Solar Energy;

MAJOR IDENTIFIERS: *Ohm Law of Electricity

This courseware evaluation rates the Ohm's Law and Solar Energy program developed by the Iowa Department of Public Instruction. (The program—not contained in this document—covers Ohm's law and resistance problems, passive solar energy, and project ideas and sources.) Part A describes the program in terms of subject area (construction and electronics) and hardware requirements (Apple II), indicates its suitability for use as tutorial in grades 9-12, and gives a time estimate (15-20 minutes).

Availability information includes cost ($1.00 plus disk) and contact address. Part B contains the evaluation criteria in eight categories; reviewer ratings appear as yes, somewhat, no, and not applicable, with explanatory comments. Part C summarizes the evaluation. This program received a yes rating for subject matter; somewhat for technical presentation, student and program interaction, and documentation; and no for student evaluation. Reviewers noted that the Ohm's law and solar energy portions were good and the latter was useful in eighth-grade audit, but the project file was of little value to technology students. Overall, the program was recommended with reservations.

ED300679

Reading Vernier Calipers. Courseware Evaluation for Vocational and Technical Education.

Goldstine, James; And Others

Ohio State University, Columbus. National Center for Research in Vocational Education.

15 Jun 1987, 9p. For the basic evaluation form, see ED 244 058.

SPONSORING AGENCY: Office of Vocational and Adult Education (ED), Washington, DC.

EDRS PRICE - MF01/PC01 plus postage.

DOCUMENT TYPE: Test, Questionnaire (160)

MAJOR DESCRIPTORS: *Computer Graphics; *Computer Software Reviews; *Courseware; *Engineering Drawing; *Measurement Equipment

MAJOR IDENTIFIERS: *Calipers

This courseware evaluation rates the Reading Vernier Calipers program developed by EMC Publishing Company. (The program—not contained in this document—uses high resolution graphics to illustrate the micrometer and describe its components, functions, and practical applications.) Part A describes the program in terms of subject area (technical drawing, construction, measurement) and equipment requirements (Apple II and a Vernier Caliper), indicates its suitability for use as drill or tutorial in grades 9-12, and gives a time estimate (45 minutes). Availability information includes contact address. Part B contains the evaluation criteria in eight categories; reviewer ratings appear as yes, somewhat, no, and not applicable, with explanatory comments. Part C summarizes the evaluation. This program received yes ratings for subject matter, technical presentation, student and program interaction, and documentation; somewhat ratings were given for documentation and student evaluation. Strengths were good pace and effective use of graphics; reviewers noted that it does not provide the correct answer if students answer incorrectly. The program is recommended as a stand-alone or reinforcement tool.

ED300681

Electrical Principles and Wiring Review. Courseware Evaluation for Vocational and Technical Education.

Kaylor, Robert; And Others

Ohio State University, Columbus. National Center for Research in Vocational Education.

15 Jun 1987, 9p. For the basic evaluation form, see ED 244 058.

SPONSORING AGENCY: Office of Vocational and Adult Education (ED), Washington, DC.

EDRS PRICE - MF01/PC01 plus postage.

DOCUMENT TYPE: Test, Questionnaire (160)

MAJOR DESCRIPTORS: *Computer Software Reviews; *Courseware; *Electricity; *Electric Motors; *Test Items

MAJOR IDENTIFIERS: *Electrical Wiring

This courseware evaluation rates the Electrical Principles and Wiring Review program developed by Hobar Publications. (The program—not contained in this document—includes 400 test questions on basic electricity, grounding, transmission, measuring, and practical wiring practices.) Part A describes the program in terms of subject area and hardware requirements (Apple II, color monitor, and printer), indicates its suitability for use as drill and practice in grades 11-12, and gives a time estimate (30 minutes per section for 7 sections). Accompanying materials include a manual, student information sheet, and teacher answer key. Availability information includes contact address. Part B contains the evaluation criteria in eight categories; reviewer ratings appear as yes, somewhat, no, and not applicable, with explanatory comments. Part C summarizes the evaluation. This program received yes ratings for technical presentation and student interaction; somewhat for subject matter, student evaluation, and documentation; and no for program interaction. Reviewers noted that the program gives teachers the ability to create a test from the file of questions, but that students may become bored and one computer per student is required.

ED301729

Microcomputer Series. Duty Task List.

Oklahoma State Department of Vocational and Technical Education, Stillwater. Curriculum and Instructional Materials Center.

1988, 83p. For other duty/task lists, see ED 301 723-751.

AVAILABLE FROM: Curriculum and Instructional Materials Center, Oklahoma Department of Vocational and Technical Education, 1500 West Seventh Avenue, Stillwater, OK 74074.

EDRS PRICE - MF01/PC04 plus postage.

DOCUMENT TYPE: Teaching Guide (052)

MAJOR DESCRIPTORS: *Data Processing; *Microcomputers; *Occupational Information; *Programers; *Word Processing

This document contains the occupational duty/task lists for eight occupations in the microcomputer series. Each occupation is divided into 5 to 11 duties. A separate page for each duty in the occupation lists the tasks in that duty along with its code number and columns to indicate whether that particular duty has been taught and to provide space for comments. The occupations are microcomputer operator, data entry clerk, data processing clerk, word processing specialist, microcomputer programmer, microcomputer analyst, microcomputer business applications specialist, and automated accounting clerk. A progress chart is provided for tracking individualized instruction. The occupational duty/task lists are the result of an extensive two-step development process in which information on current occupational requirements was gathered from such sources as consortia, trade associations, and current curriculum materials and was then synthesized by industry representatives, vocational instructors, and state-level representatives.

ED300674

Drugs—Effect and Control. Courseware Evaluation for Vocational and Technical Education.

Rice, Linda; And Others

Ohio State University, Columbus. National Center for Research in Vocational Education.

Mar 1988, 10p. For the basic evaluation form, see ED 244 058.

SPONSORING AGENCY: Office of Vocational and Adult Education (ED), Washington, DC.

EDRS PRICE - MF01/PC01 plus postage.

DOCUMENT TYPE: Test, Questionnaire (160)

MAJOR DESCRIPTORS: *Computer Software Reviews; *Courseware; *Decision Making; *Drug Use; *Substance Abuse

This courseware evaluation rates the Drugs—Effect and Control program developed by Marshware/Marshfilm. (The program—not contained in this document—includes Drugs—Who's in Control and Their Effect on You.) Part A describes the program in terms of subject area and hardware requirements (Apple II, color monitor); indicates its suitability for use as application, drill, tutorial, simulation, or gaming in grades 7-12; and gives a time estimate (30 minutes). Accompanying material includes teacher guides. Availability information includes backup policy ($10.00 within 30 days of purchase). Part B contains the evaluation criteria in eight categories; reviewer ratings appear as yes, somewhat, no, and not applicable, with explanatory comments. Part C summarizes the evaluation. The program received yes ratings in all categories: subject matter, technical presentation, student and program interaction, documentation, student evaluation, work behaviors, and application programs. Reviewers found the program easy to use and a good introduction to drug information and group interaction, but expressed a need for more difficult questions for upper-level students. The program is highly recommended.

ED300682

Concepts in Static Electricity. Courseware Evaluation for Vocational and Technical Education.

Sommer, Sandra; And Others

Ohio State University, Columbus. National Center for Research in Vocational Education.

8 Jun 1987, 9p. For the basic evaluation form, see ED 244 058.

SPONSORING AGENCY: Office of Vocational and Adult Education (ED), Washington, DC.

EDRS PRICE - MF01/PC01 plus postage.

DOCUMENT TYPE: Test, Questionnaire (160)

MAJOR DESCRIPTORS: *Computer Software Reviews; *Courseware; *Electricity; *Electronic Equipment

MAJOR IDENTIFIERS: *Electroscopes

This courseware evaluation rates the Concepts in Static Electricity program developed by Micro Learningware. (The program—not contained in this document—is a four-disk set covering the electroscope, charging by induction, grounding, and charging by conduction.)

Part A describes the program in terms of subject area and hardware requirements (Apple II, color monitor), indicates its suitability for use as a tutorial in grades 7-12, and gives a time estimate (20-30 minutes per section). Availability information includes contact address and backup policy. Part B contains the evaluation criteria in eight categories; reviewer ratings appear as yes, somewhat, no, and not applicable, with explanatory comments. Part C summarizes the evaluation. The program received yes ratings for subject matter, technical presentation, and documentation; and somewhat ratings for student and program interaction and student evaluation. Reviewers found the program too slow, narrow in scope, and outdated, although it may be used as a tutorial if a student misses a lesson.

ED300676

Blueprint Reading. Courseware Evaluation for Vocational and Technical Education.

Turner, Gordon; And Others

Ohio State University, Columbus. National Center for Research in Vocational Education.

8 Jun 1987, 9p. For the basic evaluation form, see ED 244 058.

SPONSORING AGENCY: Office of Vocational and Adult Education (ED), Washington, DC.

EDRS PRICE - MF01/PC01 plus postage.

DOCUMENT TYPE: Test, Questionnaire (160)

MAJOR DESCRIPTORS: *Blueprints; *Computer Software Reviews; *Courseware; *Engineering Drawing; *Orthographic Projection

This courseware evaluation rates the Blueprint Reading program developed by the Iowa Department of Public Instruction. (The program—not contained in this document—is self-paced and contains review questions to supplement instruction in blueprint reading and mechanical drawing.) Part A describes the program in terms of subject area (fractions, decimals, orthographic projection) and hardware requirements (Apple II), indicates its suitability for use as drill or tutorial for grades 9-12, and gives a time estimate (30 minutes to 1 hour). Availability information includes cost ($1.00 plus disk) and contact address. Part B contains the evaluation criteria in eight categories; reviewer ratings appear as yes, somewhat, no, and not applicable, with explanatory comments. Part C summarizes the evaluation. This program received yes ratings for subject matter, technical presentation, student and program interaction, and documentation; somewhat for work behaviors; and no for student evaluation. A strength is clear presentation of spatial relationships; noted weaknesses were that more than one answer is possible and it is not a stand-alone program. Overall, the program is highly recommended.

ED300683

Design Your Own Home. Courseware Evaluation for Vocational and Technical Education.

Turner, Gordon; And Others

Ohio State University, Columbus. National Center for Research in Vocational Education.

15 Jun 1987, 9p. For the basic evaluation form, see ED 244 058.

SPONSORING AGENCY: Office of Vocational and Adult Education (ED), Washington, DC.

EDRS PRICE - MF01/PC01 plus postage.

DOCUMENT TYPE: Test, Questionnaire (160)

MAJOR DESCRIPTORS: *Architectural Drafting; *Building Plans; *Computer Software Reviews; *Courseware; *Engineering Drawing; *Housing

This courseware evaluation rates the Design Your Own Home program developed by Avant-Garde Publishing Company. (The program—not contained in this document—uses standard architectural scales and 126 shapes to allow creation of structural floorplans and sideviews.) Part A describes the program in terms of subject area and hardware requirements (Apple II, graphics pad, and joystick, paddle, or mouse), indicates its suitability for use in grades 11-12 for regular or gifted classes, and gives a time estimate (1-2 weeks). Accompanying materials include manual, student workbook, and teacher guide. Availability information includes preview policy (30 days), backup policy, and contact address. Part B contains the evaluation criteria in eight categories; reviewer ratings appear as yes, somewhat, no, and not applicable, with explanatory comments. Part C summarizes the evaluation. The program received yes ratings for student interaction, work behaviors, and application programs; and somewhat for subject matter, technical presentation, and documentation. A good introduction to computer-assisted design, the program takes patience to learn; it is difficult to set accurately scaled drawings and to print. The program is recommended as a supplement to existing courses.

ED300685

Hi-Res Electronic Design. Courseware Evaluation for Vocational and Technical Education.

Turner, Gordon; And Others

Ohio State University, Columbus. National Center for Research in Vocational Education.

May 1987, 9p. For the basic evaluation form, see ED 244 058.

SPONSORING AGENCY: Office of Vocational and Adult Education (ED), Washington, DC.

EDRS PRICE - MF01/PC01 plus postage.

DOCUMENT TYPE: Test, Questionnaire (160)

MAJOR DESCRIPTORS: *Computer Software Reviews; *Courseware; *Diagrams; *Electronics; *Engineering Graphics

This courseware evaluation rates the Hi-Res Electronic Design program developed by Avant-Garde Creations. (The program—not contained in this document—is designed to determine closure and area of a survey.) Part A describes the program in terms of subject area (schematic diagrams and symbols) and hardware requirements (Apple II, color monitor, data disk, and mouse, paddle, or joystick), indicates its suitability for use in grades 9-12, and gives a time estimate (45 minutes and up). Availability information includes backup and preview policy and contact address. Part B contains the evaluation criteria in eight categories; reviewer ratings appear as yes, somewhat, no, and not applicable, with explanatory comments. Part C summarizes the evaluation. Yes ratings were given for subject matter, technical presentation, student interaction, and application programs; somewhat for documentation and work behaviors; program interaction and student evaluation were not applicable. Reviewers noted that the program uses graphics well to teach symbols and makes schematic diagrams easier, but that printing is difficult and documentation weak. The program is recommended as unique, but awkward to use.

Writing

ED298484

Children and Writing in the Electronic Age. PEN 67.

Downes, Toni; Hingerty, Christina

Primary English Teaching Association, Rozelle (Australia).

1988, 9p.

EDRS PRICE - MF01/PC01 plus postage.

DOCUMENT TYPE: Teaching Guide (052)

MAJOR DESCRIPTORS: *Computer Software Reviews; *Courseware; *Writing Instruction

MAJOR IDENTIFIERS: *Childrens Writing

This pamphlet presents a range of software packages and activities for primary English teachers to use in the writing classroom. The ideas outlined in the pamphlet are designed to support writers in the various stages of the writing process within the context of a rich writing environment. The activities outlined in this pamphlet are designed for pairs or small groups of children since writing with a computer need not be a solitary act. The list of ideas and software packages is not exhaustive, but is presented as a range of possibilities which teachers and children can select from and explore further. Forty-six software packages are discussed in this pamphlet and are listed at the end.

ED301887

The Sweetwater Model for Writing Improvement.

Head, Susan D.

Nov 1988; 19p. Paper presented at the Annual Meeting of the Association for the Development of Computer-Based Instructional Systems (Philadelphia, PA, November 5-7, 1988).

EDRS PRICE - MF01/PC01 plus postage.

DOCUMENT TYPE: Project Description (141); Conference Paper (150)

MAJOR DESCRIPTORS: *Computer Assisted Instruction; *Word Processing; *Writing Improvement; *Writing Instruction; *Writing Laboratories

MAJOR IDENTIFIERS: *Process Approach (Writing)

This report describes a computer-assisted writing laboratory project integrating Model Curriculum Standards (teacher-developed instructional literature guides integrating the reading of core pieces of literature with the writing process), the writing process, computer hardware and software, and staff development. The report estimates that in the second year of the project (1988-89) 20,000 students at 18 junior and senior high schools in the Sweetwater Union High School District (Chula Vista, California) will rotate through the 36 laboratories and complete a variety of writing assignments allowing them to incorporate revision as a natural part of writing and allowing the 250 teachers to respond more to content and text-level issues. The report also describes the 3-year evaluation plan for the project. Appendixes include a list of 41 literature-based writing assignments, the results of a survey of teachers in the project, and excerpts from student evaluations.

ED307616

Teaching Writing with Peer Response Groups. Encouraging Revision. ERIC Digest.

Herrmann, Andrea W.

ERIC Clearinghouse on Reading and Communication Skills, Bloomington, IN.

May 1989, 5p.

EDRS PRICE - MF01/PC01 plus postage.

DOCUMENT TYPE: ERIC Product (071); Bibliography (131)

MAJOR DESCRIPTORS: *Computer Assisted Instruction; *Cooperative Learning; *Peer Teaching; *Revision (Written Composition); *Writing Instruction

MAJOR IDENTIFIERS: *Collaborative Learning

Writing instruction reflects a growing appreciation of the value of talk. By implementing peer writing groups, teachers encourage students to give, seek, and react to oral feedback among themselves as they write, in addition to reacting to the teacher's traditional comments on finished papers. Collaboration in writing groups provides writers with an opportunity to read their drafts aloud and to discuss them face-to-face with a peer audience while the written product is taking shape. Studies of peer reaction show both positive and negative effects on revision. Preliminary evidence suggests that the nature of peer collaboration and feedback in classrooms where computers are used to teach writing differs from that in regular writing classrooms. Under certain conditions, computers as writing tools appear to promote a collaborative environment, both in learning to write and in learning to use the technology. The literature suggests that the effects of peer comments on revision is not a simple cause and effect matter, but rather a complex one, dependent upon the interrelationship of multiple factors within the evolving social environment of particular classrooms and groups of students. (Twenty-eight references are appended.)

ED300837

Desktop Publishing in High School: Empowering Students as Writers and Readers.

Herrmann, Andrea W.

Nov 1988, 21p. Paper presented at the Annual Meeting of the National Council of Teachers of English (78th, St. Louis, MO, November 18-23, 1988).

EDRS PRICE - MF01/PC01 plus postage.

DOCUMENT TYPE: Non-Classroom Material (055); Conference Paper (150)

MAJOR DESCRIPTORS: *Computer Software; *Computer Uses in Education; *Writing for Publication; *Writing Instruction

MAJOR IDENTIFIERS: *Desktop Publishing

Desktop publishing (DTP) is growing increasingly popular in the writing classroom for several reasons. By using DTP, students gain experience in a variety of disciplines—writing, typesetting, graphic design, printing, and computing. DTP represents a revolutionary literacy tool for schools since it encourages students to create and publish manuscripts of a high professional quality. Yet DTP does not generally exist in schools, partly because of the expense involved and the computer expertise needed. Recently, however, two inexpensive programs that run on Apple II computers—TimeWorks' "Publish It " and Springboard Software's "Springboard Publisher"—have been released, changing teachers' options completely. To keep computers and writing in a proper balance, DTP should be introduced in special courses designed to teach writing and desktop publishing, such as journalism courses, writing for publication courses, or literary magazine courses. DTP brings students into a new relationship with the written word. If DTP is introduced thoughtfully into the school curriculum, it can improve students' reading and writing skills, while providing opportunities for them to acquire a range of computer publishing abilities which are increasingly valued outside the classroom. (A list of DTP software publishers and mail-order houses, and several examples of DTP publications are appended.)

ED307628

A Classroom Word Processing Guide. Report No. 18.

Miller-Souviney, Barbara; Souviney, Randall

California University, La Jolla. Center for Human Information Processing.

May 1987, 18p.

EDRS PRICE - MF01/PC01 plus postage.

DOCUMENT TYPE: Teaching Guide (052)

MAJOR DESCRIPTORS: *Computer Assisted Instruction; *Word Processing; *Writing Instruction; *Writing Processes

This guide discusses how a computer can motivate students, how it can be used as a support for the writing process, and how it can help teachers reinforce good writing habits. The guide includes sections on managing the classroom computer; student scheduling; human resources; introducing the computer; learning editor commands; managing student text files; and the writing process, which includes prewriting, writing, response, revision, evaluation, and recognition. An appendix of letters from children to computer pen pals is attached.

ED307627

Recognition: The Engine that Drives the Writing Process. Report No. 17.

Miller-Souviney, Barbara; Souviney, Randall

California University, La Jolla. Center for Human Information Processing.

May 1987, 15p.

EDRS PRICE - MF01/PC01 plus postage.

DOCUMENT TYPE: Teaching Guide (052); Position Paper (120)

MAJOR DESCRIPTORS: *Computer Uses in Education; *Student Publications; *Writing Exercises; *Writing Instruction; *Writing Processes

MAJOR IDENTIFIERS: *Process Approach (Writing)

Computers and networks have opened new opportunities for recognition experiences in schools. Students gain the potential for increased recognition through the exchange of their writing with students in other classrooms in their own school, in other parts of the country, or in other parts of the world. Reorganizing and editing text for publication is also greatly facilitated when articles and stories are first stored on computer disks. This combination of an increased audience for student writing and the ease of revising text has substantially increased the quantity and quality of writing produced in the participating classrooms.

ED297317

Word Processing in Elementary Schools: Seven Case Studies. Education and Technology Series.

Murray, Jack; And Others

Ontario Department of Education, Toronto.

1986, 67p.

AVAILABLE FROM: Publications Sales, The Ontario Institute for Studies in Education, 252 Bloor Street West, Toronto, Ontario, Canada M5S 1V6.

EDRS PRICE - MF01/PC03 plus postage.

DOCUMENT TYPE: Review Literature (070)

MAJOR DESCRIPTORS: *Classroom Environment; *Computer Assisted Instruction; *Teaching Methods; *Word Processing; *Writing Instruction; *Writing Laboratories

As a result of preliminary observations of word processing in elementary level language the seven case studies presented in this report reveal the effectiveness of current word processing (WP) activities within their respective instructional contexts. Each study is presented separately, detailing the classroom context, tasks and outcomes, program effectiveness, and results. Observations common to all of the studies are discussed under the following categories: (1) common features, such as the limitations created by the physical set-up of the labs and teachers' general satisfaction with the software; (2) younger versus older students, with younger students exhibiting the least facility with the keyboard and various machine functions while older students are able to take advantage of more of the functions offered by word processing; (3) regular classrooms versus labs, where computers in the regular classroom may create a physically congested environment and require a longer initial start-up time than would a lab situation; and (4) special education, specifically how WP can benefit students in this setting. Generally, the studies indicated that the type and/or degree of success students attain using WP is governed by the context in which it is used. The most important contextual variables identified in the studies were age, equipment availability, and location. (Lists of software publishers and related reading are appended.)

ED297706

Beyond Amplification: Using the Computer To Reorganize Mental Functioning. Technical Report No. 38.

Pea, Roy D.

Bank Street College of Education, New York, NY. Center for Children and Technology.

Mar 1986, 35p. Paper presented at the Annual Meeting of the American Educational Research Association (Chicago, IL, March 31-April 4, 1985).

EDRS PRICE - MF01 plus postage. PC not available from EDRS.
DOCUMENT TYPE: Review Literature (070); Evaluative Report (142); Conference Paper (150)
MAJOR DESCRIPTORS: *Cognitive Processes; *Computer Assisted Instruction; *Cultural Influences; *Mathematics Curriculum; *Problem Solving; *Writing (Composition)
MAJOR IDENTIFIERS: *Spreadsheets

This paper considers the possibilities of using computers not only to amplify, but to reorganize children's thinking and mental functioning. These two different conceptualizations of the transformational role of noncomputer cognitive technologies (such as written language) in human intelligence and cognitive change are sketched, and the different implications to be drawn from these conceptualizations are considered in relation to human thinking and the educational processes. Several examples of software as cognitive technologies are analyzed, and the advantages of the reorganizer approach are detailed. It is argued that since the cognitive technologies we invent can serve as instruments of cultural redefinition (shaping who we are by what we do), the selecting of values for educational goals becomes important. Finally, it is suggested that the urgency of updating educational aims and methods recommends an activist research paradigm for simultaneously creating and studying changes in the processes and outcomes of human learning with new cognitive and educational technologies. (117 references)

ED299588
Sharing Writing on an Electronic Network.
Schwartz, Jeffrey
1986, 9p.
EDRS PRICE - MF01/PC01 plus postage.
DOCUMENT TYPE: Project Description (141)
MAJOR DESCRIPTORS: *Computer Networks; *Electronic Mail; *Writing Instruction

A writing exchange project at Bread Loaf School of English at Middlebury College in Vermont, funded by Apple Education Foundation and McDonnell Douglas, examined what happened when high school students use word processors and a modem to write to distant audiences. In the first exchange, students interviewed each other in pairs and wrote short biographies of the person they interviewed. In the second exchange, students worked in small groups to describe their school and community. Writing to a distant audience motivated students to pay more attention to what they wrote as well as how they said it. Students exchanging writing with outside, interested readers broaden the context in which they write, learn about life outside their own communities, and reflect on themselves.

ED307606
Word Processing and Writing Instruction. Focused Access to Selected Topics (FAST) Bibliography No. 10.
Shermis, Michael
ERIC Clearinghouse on Reading and Communication Skills, Bloomington, IN.
Feb 1989, 6p.
EDRS PRICE - MF01/PC01 plus postage.
DOCUMENT TYPE: ERIC Product (071); Bibliography (131)
MAJOR DESCRIPTORS: *Computer Assisted Instruction; *Editing; *Word Processing; *Writing Instruction; *Writing Processes

Synthesizing research on writing instruction using word processors, this annotated bibliography contains 28 references of articles and papers in the ERIC database. The first section includes strategies, techniques, exercises, activities, and ideas on how to use time on a word processor most effectively. Articles and papers discussing the numerous benefits of word-processor use, including motivating students to spend more time on task and encouraging changes and rewriting, are presented in the section. The resources in the last section will be helpful in selecting word-processing programs and other kinds of instructional software.

ED297358
Computers and the Waterways' Project.
Spiegel, Richard A.
1988, 10p. Paper presented at the Conference of the New York State Association for Computers and Technology (Rye, NY, 1988).
AVAILABLE FROM: The Waterways Project, 799 Greenwich St., New York, NY 19914 ($1.00).
EDRS PRICE - MF01/PC01 plus postage.
DOCUMENT TYPE: Project Description (141); Conference Paper (150)
MAJOR DESCRIPTORS: *Computer Assisted Instruction; *High Risk Students; *Writing for Publication
MAJOR IDENTIFIERS: *Literary Magazines; *Waterways Project

Begun in 1979, the Waterways Project, which provides literary arts program experience for at risk students in New York City, is described in this paper. The Waterways Project was started as a service organization for small press publishers and writers. The paper recounts the project's involvement in book fairs, computer programming, a literary arts publishing program, and adult poetry workshops. The director of the project relates of several students' experiences with individualized lessons at the computer. The paper also describes the project's clientele, i.e., students with drug problems, high school dropouts, and youths in transition. The goal of the project is identified in the paper as giving students the encouragement to try to have their work published, which is intended to give them direction. An appendix containing the project's history concludes the paper.

Special Populations

Adult Education

ED300537

The Case for Computers.

Business Council for Effective Literacy, New York, NY.

Jul 1985, 4p. In: *BCEL Newsletter for the Business Community*: n1 v4 p4-5 Jul 1985.

EDRS PRICE - MF01/PC01 plus postage.

DOCUMENT TYPE: Journal Article (080); General Report (140)

MAJOR DESCRIPTORS: *Adult Basic Education; *Adult Literacy; *Computer Assisted Instruction; *Illiteracy; *Literacy Education

Given the large gap between the millions of adults in need of basic literacy skills and the shortage of teachers, tutors, and funds to serve them, computer-assisted instruction (CAI) has the potential to reduce the gap. The merits of CAI include its holding power, provision of a positive learning environment, opportunity to learn about computers, enhancement of teacher productivity, instructional effectiveness, and attrition reduction. Notable models embodying many of these elements are the ABLE (Adult Basic Literacy/Education) program and the U.S. Navy's Wisher-Duffy system. Information on the extent of CAI use points to great variation from one literacy-providing sector to another. Elements that impede the wider use of computers to teach adult basic skills include limited access to hardware, lack of good software, prevailing attitudes of educators who resist new techniques, lack of training for educators in the use of CAI, and lack of a central communications network to enable educators to gather information about computers in basic skills and for share experience.

ED301698

Adult Basic Education Curriculum Guide ABE-01. ABC's: Accountability, Basics, Citizenship.

Cincinnati Public Schools, Ohio.

1988, 410p. For a related document, see ED 301 699.

EDRS PRICE - MF01/PC17 plus postage.

DOCUMENT TYPE: Teaching Guide (052)

MAJOR DESCRIPTORS: *Adult Basic Education; *Computer Literacy; *Coping; *High School Equivalency Programs; *Language Arts

This curriculum guide provides teachers and ABC's: Accountability, Basics, Citizenship. Basic Education (ABE)/General Educational Development (GED) students. Chapter 1 provides guidance/evaluation procedures to help the teacher maintain and document the entrance level and progress of the students. Chapter 2 focuses on specialized guidance procedures. Chapters 3 and 4 on language arts and mathematics, respectively, comprise the core of the ABE portion. The language arts chapter is divided into reading, oral communication, listening, writing, and spelling. Each of these areas as well as the chapter on mathematics is divided into Levels I, II, and III. Within each area, behavioral objectives are correlated with skills, activities and teaching strategies, and evaluative procedures. Chapter 5 is divided into the five distinct areas that comprise the GED program—reading/literature and the arts, mathematics, social studies, science, and writing skills. Materials for the reading and mathematics requirements are found in chapters 3 and 4. For the other areas, an outline of the areas to be covered is followed by the objectives/skills that are correlated with activities, and suggestions for evaluation. Bibliographies are provided. Chapters 6 and 7 pertain to computer literacy and coping skills. Again, objectives, activities, evaluative procedures, and a bibliography are provided for each area.

ED298297

Keewatin Region Educational Authority Pilot Adult Education Project: Computer-Assisted Learning. Year One Report.

Fahy, Patrick

Alberta Vocational Centre, Edmonton.

Jun 1988, 110p.

EDRS PRICE - MF01/PC05 plus postage.

DOCUMENT TYPE: Research Report (143)

MAJOR DESCRIPTORS: *Adult Education; *Computer Assisted Instruction; ; *Eskimos; *Pilot

Projects; *Program Development; *Program Implementation
MAJOR IDENTIFIERS: *Canada (North)

A project was undertaken to provide computer-assisted instruction (CAI) to 92 native adult students in the Keewatin region of the Northwest Territories of Canada. The project's principal goals were as follows: attract and maintain the interest of a greater segment of the target population, produce faster progress in academic training, help program participants develop job readiness skills, increase participants' chances of getting employment or improving their level of employment, and create a more effective educational model for Inuit students that may be used throughout the Arctic. A year after the project began, it was evaluated both quantitatively and qualitatively through such data collection instruments as attitude assessments, journals and logs kept by program participants, and onsite interviews with the adult educators and students involved in the project. The adult educators participating in the project agreed that the CAI format increased (sometimes dramatically) the numbers of students in programs. Comparisons of participants' performance on pretests and posttests showed average grade equivalency gains of 0.63 and 0.92 grade levels after 3 and 6 months, respectively, for 26 students for whom complete test results were available. Students and teachers alike felt that the CAI enhanced students' general computer literacy and specific job skills.

ED305463

Computer Conferencing: A Technology for Adult Education. Technical Report No. 1.

Florini, Barbara M.

Syracuse University, N.Y.

Feb 1989, 23p.

SPONSORING AGENCY: Kellogg Foundation, Battle Creek, Mich.

AVAILABLE FROM: Syracuse University Kellogg Project, 113 Euclid Avenue, Syracuse, NY 13244-4460 ($4.95; 2 or more copies: 10% discount).

EDRS PRICE - MF01 plus postage. PC not available from EDRS.

DOCUMENT TYPE: Research Report (143)

MAJOR DESCRIPTORS: *Adult Education; *Computer Uses in Education; *Educational Technology; *Teleconferencing

Computer conferencing is a promising technology for use in adult education because it eliminates time and geography as barriers to learning for adults. A growing body of evidence indicates that the technology is a suitable means for delivering instruction, although a number of questions remain as to the optimum circumstances for its use. For example, use of computer conferencing has institutional repercussions, such as mere inertia, policy issues, financial issues, cost-benefit ratios, and governmental regulations. Faculty, students, and support staff involved with the technology are also affected. Faculty must alter teaching approaches and reconsider student learning. Students must accommodate themselves to the new format and face the demands of investment in hardware and software. Selection of computer conferencing also raises questions related to instructional design. Points for consideration include the fundamentally asynchronous communication of computer conferencing and the nature of computer screens. The introduction of computer conferencing for instructional purposes places new demands on faculty who need to be conversant with the fundamentals of the computer operating system, learn to use the software, and prepare instruction consistent with its characteristics. Research is needed in the areas of the institution, participants, teaching and learning, and the process.

ED305921

Role of Technology in the Education, Training and Retraining of Adult Workers.

Kurland, Norman D.; And Others

Kurland (Norman D.) and Associates, Delman, NY.

5 Oct 1984, 150p. Best copy available; light and broken type may not reproduce well.

SPONSORING AGENCY: Congress of the U.S., Washington, D.C. Office of Technology Assessment.

EDRS PRICE - MF01/PC06 plus postage.

DOCUMENT TYPE: Evaluative Report (142); Research Report (143)

MAJOR DESCRIPTORS: *Adult Basic Education; *Computer Assisted Instruction; *Educational Technology; *Industrial Training; *Media Research; *Technical Education

This report shows how new technological tools or devices are being used in adult education and training; it examines the evidence of their effectiveness and costs; and it suggests prospects for the future use of technologies. Particular attention is given to uses with displaced and employed workers needing basic skills, high school diplomas, and skill upgrading. The technologies examined are broadcast television; cable; Instructional Television Fixed Service (ITFS); videotape; videodisk; computers (including computer assisted instruction, computer managed instruction, and embedded training); simulators; emulators; telecommunications; job aids; and "off-the-shelf" programs. In addition to discussions of each of the technologies, this report considers future hardware/software systems; settings in which the technologies have been used; the results of and need for more effectiveness studies; computer assisted instruction in basic adult education; adult students' need for social interaction; instructional design strategies; costs; barriers to and incentives for educational change; and lessons from previous attempts to integrate technological innovations in education. It is concluded that, although new technologies will come to play an important role in adult education and training, there is a great need for more research and systematic studies to demonstrate the value of technology based programs. The text is supplemented by 11 tables, 108 references, and a list of the names and addresses of 81 persons interviewed.

ED308472

Curriculum Guide for Use with "Challenger." CALL (Computer-Assisted Literacy in Libraries).

Las Vegas-Clark County Library District, Las Vegas, NV.

Jun 1989, 122p. For a similar guide developed by the same authors for use with the *Laubach Way to Reading*, see ED 298 444.

EDRS PRICE - MF01/PC05 plus postage.

DOCUMENT TYPE: Teaching Guide (052)

MAJOR DESCRIPTORS: *Adult Education; *Adult Literacy; *Computer Assisted Instruction; *Literacy Education

MAJOR IDENTIFIERS: *Computer Assisted Literacy in Libraries

This curriculum guide was developed for tutors using the *Challenger Adult Reading Series*. The guide is intended to help tutors make the lessons more effective, motivational, and meaningful for students. The guide is based on a five-part lesson plan prescribed by the Computer-Assisted Literacy in Libraries (CALL) program: language experience, textbook, word patterns, real-world reading and writing, and computer-assisted instruction. Each page in the guide is intended to accompany the specific lesson contents, and shows material available but not mandatory for use by CALL tutors to reinforce the lesson contents and concepts.

ED302725

Adult Education and Technology Project Report 1987-1988.

Lavin, Richard J.

Merrimack Education Center, Chelmsford, MA.

1988, 26p.

EDRS PRICE - MF01/PC02 plus postage.

DOCUMENT TYPE: Project Description (141)

MAJOR DESCRIPTORS: *Adult Basic Education; *Adult Literacy; *Computer Uses in Education; *Databases; *Educational Technology; *Technical Assistance

A Merrimack Education Center (MEC) project was developed to provide technology consultation, expertise, and advice for capacity building and networking of adult center staff in regional locations in Massachusetts. Two pilot sites were installed to demonstrate the computer/skills center approach of teaching basic skills to adult learners. Six facilitators were established to provide technology assistance to adult educators. A computerized software reviews database was developed as a service to adult educators applying computers in their instructional programs. The software reviews data disk was designed to provide useful information about readily available computer software programs that have potential for use in adult education programs. Related program activities were continued MEC representation on the Adult Literacy and Technology Steering Committee for the Penn State University adult literacy and technology project, work on a partnership project with Digital Equipment Corporation to network and link superintendents through a workstation project, submission of a journal article describing the use of computers as tools in reducing adult literacy, review of MEC's *Computers in Adult Education Planning Guidebook*, and dissemination activities through conferences and newsletters. The project made recommendations for consideration by the Massachusetts Department of Education and agencies responsible for adult literacy programs.

ED302726

Adult Education Report.

Merrimack Education Center, Chelmsford, MA.

Jul 1984, 104p.

SPONSORING AGENCY: Massachusetts State Department of Education, Boston.

EDRS PRICE - MF01/PC05 plus postage.

DOCUMENT TYPE: Project Description (141)
MAJOR DESCRIPTORS: *Adult Basic Education; *Adult Literacy; *Computer Uses in Education; *Databases; *Educational Technology; *Technical Assistance

A study was initiated to investigate the current status of technology initiatives in terms of their impact on six adult education centers in Massachusetts. It was designed to provide new insights into the educational effects of computer instruction upon adult basic education students. A second effort focused on the presentation of a model of statewide technology transfer and diffusion. The site reviews indicated that the centers serve a very diverse clientele; the main programs offered were adult basic education and English as a second language; and each center was organized as a service site to reach out to clients. Project activities were aimed at designing and operating computer literacy programs for adult educators; designing and offering a software leadership institute for training trainers; providing microcomputer equipment for instructional purposes through a lease/purchase arrangement; designing an administrative database to be field tested in two adult learning sites; and documenting and disseminating findings from these technology initiatives and new practices. Recommendations were made that will assist future planning by adult educators who are studying and exploring ways to optimize the use of technology within their educational and training settings. (Appendixes include workshop agendas, software evaluation forms, the Philadelphia Department of Education's list of adult education courseware, and a 33-page bibliography of print resources and courseware.)

ED300592

Utilizing Modern Technology in Adult and Continuing Education Programs.

New York State Education Department, Albany. Bureau of Curriculum Development.; New York State Education Department, Albany. Division of Adult and Continuing Education Programs.
1988, 48p. For the guide to which this is a supplement, see ED 232 019.
AVAILABLE FROM: George T. Tregaskis, Room 314 EB, New York State Education Department, Albany, NY 12234.
EDRS PRICE - MF01/PC02 plus postage.
DOCUMENT TYPE: Teaching Guide (052)
MAJOR DESCRIPTORS: *Adult Education; *Computer Assisted Instruction; *Educational Television; *Management Information Systems; *Staff Development; *Videotape Recordings

This publication, designed as a supplement to the manual entitled *Managing Programs for Adults* (1983), provides guidelines for establishing or expanding the use of video and computers by administration and staff of adult education programs. The first section presents the use of video technology for program promotion, instruction, and staff development and training. Types of promotional programs and services, a listing of promotional resources, and production of promotional videotapes are discussed. Video use in adult education classrooms and as a means to teach otherwise difficult-to-reach populations is described. This includes ways to use video, its advantages and limitations, materials needed to use video, and cost and sources of videotapes. In addition to practical considerations in buying video equipment and means of ensuring its use, advantages and ways of using video for staff development and training are discussed. The second section addresses instructional and managerial applications of computers to adult and continuing education. Examples drawn from both funded and fee-supported programs provide models of applications. Positive aspects and future potentials for the computer as a management tool are described and the pros and cons of software are explored, along with the alternatives to commercially produced software. An annotated list of supplementary software programs and a directory of vendors and references conclude this section.

ED306404

A Discussion of Computer Use in Adult Literacy Instruction.

Partridge, Susan
1989, 12p.
EDRS PRICE - MF01/PC01 plus postage.
DOCUMENT TYPE: Review Literature (070)
MAJOR DESCRIPTORS: *Adult Literacy; *Computer Assisted Instruction; *Computer Uses in Education; *Literacy Education

The many advantages claimed for using the computer in adult literacy instruction—privacy, immediate feedback, individualization, control, and flexibility—have also been observed in the practice of dedicated teachers, without the help of computers. Fortunately, many scholars still emphasize the need for teacher sensitivity and teacher-student interaction in computer instruction if such instruction is to be successful.

Options to the reactive posture of instructional technology are the proactive approach or the interactive model, which is a combination of the reactive and proactive models. Concerns of educators regarding the use of computers include the shortage of high quality computer software and emotional bonding to the computer. Educators should also take note of research that shows that computer-assisted instruction enhances the achievement of students with learning styles favoring less socialization, whereas students with a people-oriented learning style achieve more in the traditional self-paced instruction group.

ED298291

Adult Literacy & Technology National Conference (Pittsburgh, Pennsylvania, July 27-31, 1988).

Pennsylvania State University, University Park. Institute for the Study of Adult Literacy.

1988, 75p.

SPONSORING AGENCY: Apple Computer, Inc., Cupertino, CA.; Gannett Foundation, Rochester, NY.; Office of Vocational and Adult Education, Washington, DC. Division of Adult Education.

EDRS PRICE - MF01 plus postage. PC not available from EDRS.

DOCUMENT TYPE: Conference Proceedings (021); Project Description (141)

MAJOR DESCRIPTORS: *Adult Literacy; *Computer Assisted Instruction; *Educational Technology; *Literacy Education; *Technological Advancement

This document provides advance information on the symposia, workshops, and presentations of a conference which was designed to teach about new techniques and methodologies for applying technology as a solution to adult illiteracy. Brief summaries are provided of the content of the symposia, workshops, and presentations. Representative topics include social and economic importance of literacy in the workplace, literacy strategies in the military, teaching the teacher to use technology, using hypermedia in adult literacy programs, teaching reading with a computer, using telecommunications to provide literacy training, combining literacy and employment training for women, creative uses of computers with adult literacy students, interactive video disc and workplace literacy training, using readability-calculations software, family literacy efforts, models for developing statewide literacy networks, a model for staff development and technical support for literacy providers, and microcomputers in the adult learning environment. Other themes are teaching workplace literacy through television, creating job-training opportunities through computers, a video series demonstrating effective teaching practices in adult literacy, and program management.

ED298261

Adult Literacy & Technology. Guide to Recommended Literacy Software. 1987 Edition.

Pennsylvania State Univ., University Park. Inst. for the Study of Adult Literacy.

1987, 160p.

SPONSORING AGENCY: Gannett Foundation, Rochester, NY.

AVAILABLE FROM: Adult Literacy and Technology Project, Institute for the Study of Adult Literacy, Pennsylvania State University, 248 Calder Way, Room 307, University Park, PA 16801.

EDRS PRICE - MF01 plus postage. PC not available from EDRS.

DOCUMENT TYPE: Book-Product Review (072); Non-Classroom Material (055)

MAJOR DESCRIPTORS: *Adult Literacy; *Basic Skills; *Computer Software; *Literacy Education; *Skill Development

This publication is an annotated guide to software for teaching adult literacy recommended by the Adult Basic Skills Technology (ABST) Project. The ABST Project was initiated in 1982 as the Region X Adult Education Software Project, an effort by the State Adult Basic Education Departments of Washington, Oregon, and Alaska to provide adult basic education sites with the technical expertise to use computer technology with their students. The featured programs include drill and practice, simulations, educational games, word processing programs, and tutorials. They serve a variety of computers and range from free to $1,000 or more in price. The featured software is listed alphabetically and by instructional category (English, reading, mathematics). The annotated remarks include title, publisher, cost, type of computer, subject area, use, descriptions, and the strengths and weaknesses of the individual programs. The guide also includes a resources section divided into four categories: technical information on computer use, listings of reviewed software, resources (including publishers' addresses), and a comment form.

ED307579

Adult Literacy: Instructional Strategies. Focused Access to Selected Topics (FAST) Bibliography No. 32.

Shermis, Michael

ERIC Clearinghouse on Reading and Communication Skills, Bloomington, IN.

May 1989, 6p.

SPONSORING AGENCY: Office of Educational Research and Improvement (ED), Washington, DC.

EDRS PRICE - MF01/PC01 plus postage.

DOCUMENT TYPE: ERIC Product (071); Bibliography (131)

MAJOR DESCRIPTORS: *Adult Literacy; *Computer Assisted Instruction; *Literacy Education

This annotated bibliography contains 36 references on teaching methods and instructional strategies in the field of adult literacy found in the ERIC database. It contains citations from the period between 1987 and 1989 and is divided into two sections. The first section lists sources for instruction and training, while the second section contains references for the use of computers in adult literacy.

Disabled Learners

ED297505

Communication, Control, and Computer Access for Disabled and Elderly Individuals. ResourceBook 4: Update to Books 1, 2, and 3.

Borden, Peter A., Ed.; Vanderheiden, Gregg C., Ed.

Wisconsin Univ., Madison. Trace Center.

1988, 385p. A product of the Research and Development Center on Communications, Control, and Computer Access for Handicapped Individuals. For ResourceBooks 1-3, see ED 283 305-307.

REPORT NO.: ISBN-0-945459-00-9

AVAILABLE FROM: Trace Research and Development Center, S-151 Waisman Center, 1500 Highland Ave., Madison, WI 53705-2280 ($18.50).

EDRS PRICE - MF01/PC16 plus postage.

DOCUMENT TYPE: Directory (132)

MAJOR DESCRIPTORS: *Accessibility (for Disabled); *Communication (Thought Transfer); *Computer Software; *Disabilities; *Electronic Control; *Older Adults

MAJOR IDENTIFIERS: *Augmentative Communication Systems

This update to the three-volume first edition of the "Rehab/Education ResourceBook Series" describes special software and products pertaining to communication, control, and computer access, designed specifically for the needs of disabled and elderly people. The 22 chapters cover: speech aids; pointing and typing aids; training and communication initiation aids; non-electronic communication aids; electronic communication and writing aids; telecommunication devices for the deaf; switches and controls; environmental controls; call, monitoring, and memory systems; modifications for standard keyboards; alternate inputs usable with all software; input devices usable with only some software; input adapters for computers; alternate display systems usable with all software; Braille printers and tactile display components; speech synthesizers; administration and management software; assessment software; education, training, and therapy software; recreation software; and personal tools or aids. Each entry lists the product and vendor's name, computers for which the product is available, a photograph (if available), and a short description. Appendix A lists other resources, such as computer assessment and training programs, newsletters, publications, service centers, etc., and Appendix B contains a glossary.

ED297692

VIPES: Video Interacting "Personably" with Exceptional Student Education.

Clinton, Janeen S., Comp., And Others

Jan 1986, 104p. Handout distributed in connection with a presentation at the Florida Instructional Computing Conference (Orlando, FL, January 1986).

EDRS PRICE - MF01/PC05 plus postage.

DOCUMENT TYPE: Project Description (141); Conference Paper (150)

MAJOR DESCRIPTORS: *Computer Literacy; *Computer Software; *Disabilities; *Input Output Devices; *Interactive Video

This packet of materials was distributed in connection with a presentation on the Florida Diagnostic and Learning Resources System (FDLRS) Instructional Technology Network's production of an interactive videocassette tape for use for self-directed inservice study for teachers and administrators working with handicapped students. The handout includes the script for the videocassette tape, which was entitled "Microcomputer Adaptive Peripheral Devices for Handicapped Students"; a draft version of the SuperPILOT program that directed the Panasonic Video Tape Player/Recorder and Apple IIe microcomputer; a list of hardware and software requirements; a sample "pre-requisite" self-directed instructional packet for teachers; and a partial ERIC bibliography on developing interactive video.

ED303017

Integrating Computers and Electronic Technology into the Curriculum for Students with Multiple Handicaps.

Dunn, Nancy; And Others

Des Moines Public Schools, Iowa.

Aug 1988, 78p. A part of the Early Childhood/Special Education Program.

EDRS PRICE - MF01/PC04 Plus postage

DOCUMENT TYPE: Non-Classroom Material (055)

MAJOR DESCRIPTORS: *Computer Software; *Computer Uses in Education; *Educational Technology; *Multiple Disabilities

The monograph is intended to offer educators a systematic approach to using electronic technology and computers with students having multiple handicaps. A model is presented which features a top down approach to curriculum with emphasis on developing age-appropriate functional skills useful in future environments. A training sequence based upon pupil ability to access electronic equipment and computers is outlined. The long term functional benefits of teaching students to use computers and electronic equipment is stressed. Processes are suggested for matching students to computer hardware and software. The chapter on communication and technology gives examples of training activities and use of various types of equipment. Another chapter focuses on integrating use of technology into the daily instructional routine. The last chapter illustrates use of technology with individual students with severe and profound handicaps. Also provided are an instructional progression and decision making flow chart, a computer evaluation form, software review and software inventory forms. A list of resources lists equipment and software (with addresses of sources) in the areas of: switch training and communication, software for concept and language development, learning tools, voice output, other output devices, switches and switch interfaces, and alternate keyboard and input devices.

ED298678

Current Uses of Artificial Intelligence in Special Education. Abstract XI: Research & Resources on Special Education.

ERIC Clearinghouse on Handicapped and Gifted Children, Reston, VA.

Jul 1987; 3p. For original reports on which this extended abstract is based, see ED 284 402-403.

AVAILABLE FROM: ERIC/OSEP Special Project on Interagency Information Dissemination, Council for Exceptional Children, 1920 Association Dr., Reston, VA 22091 (free).

EDRS PRICE - MF01/PC01 plus postage.

DOCUMENT TYPE: Book-Product Review (072)

MAJOR DESCRIPTORS: *Artificial Intelligence; *Computer System Design; *Disabilities; *Educational Administration; *Expert Systems; *Special Education

Summarized are two reports of a federally funded project on the use of artificial intelligence in special education. The first report, "Artificial Intelligence Applications in Special Education: How Feasible?," by Alan Hofmeister and Joseph Ferrara, provides information on the development and evaluation of a series of prototype systems in special education administration, training, diagnosis, and instruction. The second report, "Assessing the Accuracy of a Knowledge-Based System: Special Education Regulations and Procedures," by Alan Hofmeister, discusses procedures used to develop and evaluate one of these systems. The project evaluated a range of expert-system software and hardware, including computers of all sizes, to determine their potential usefulness in addressing special education problems. Prototype systems were then designed, including four systems designed to give a second opinion on classification decisions, a system to advise teachers dealing with behavior problems, and a system called "Mandate Consultant" which considers the appropriateness of the decision-making process used to develop an individualized education program. "Mandate Consultant" was selected for full development by the project and received extensive field-testing. Data on the prototype systems' validity, user acceptance, and administrative support suggest that expert systems are potentially effective in the areas of diagnosis, planning, and instruction, and are valuable for training purposes.

ED304854

Ends-To-Means Model.

Fitterman, Lawrence Jeffrey

1988, 28p.

EDRS PRICE - MF01/PC02 plus postage.

DOCUMENT TYPE: Non-Classroom Material (055)

MAJOR DESCRIPTORS: *Computer Software; *Database Design; *Disabilities; *Management Information Systems; *Recordkeeping; *Student Records

This paper demonstrates the importance of effective planning when using database application programs in exceptional education programs, to more efficiently track students' performance, keep vital information, and create desired reports. The described approach, called the ends-to-means model, calls for developing the database by designing the formats of the desired reports first. Then, all of the categories of information from each type of report are combined into a list; the most logical sequence of information for data entry is determined; a data entry form is designed; and sample reports are created to test the process. A prototype of a database design is provided, including a rationale, examples of database applications, and time considerations in creating the databse. The bulk of the paper is made up of visuals and transparencies used in presenting the paper to large groups.

ED304853

The Assessment Process. Video: "Guidelines for Assessment and Evaluation of Students with Augmentative and Alternative Communication Needs."

Haney, Colleen

Pennsylvania Assistive Device Center, Harrisburg.

25 Oct 1988, 25p. Paper presented at the Biennial Conference of the International Society for Augmentative and Alternative Communication (Anaheim, CA, October 23-26, 1988).

EDRS PRICE - MF01/PC01 plus postage.

DOCUMENT TYPE: Conference Paper (150); Non-Classroom Material (055); Test, Questionnaire (160)

MAJOR DESCRIPTORS: *Communication Aids (for Disabled); *Communication Disorders; *Needs Assessment; *Student Evaluation; *Videotape Recordings

MAJOR IDENTIFIERS: *Augmentative Communication Systems

This packet of materials, which was prepared to accompany a conference presentation, contains a description of a videotape titled "Guidelines for Assessment and Evaluation of Students with Augmentative and Alternative Communication Needs." This 70-minute videotape follows three children through the assessment and evaluation process to determine what types of communication systems would be helpful for them. Also included is a list of 10 books and 35 kits available from the Pennsylvania Special Education Assistive Device Center (ADC). The kits contain a wide variety of equipment, books, and tools to evaluate students' needs for assistive devices. The information packet concludes with an assessment guide for use in preparation of a long-term loan application for an assistive device from the ADC. The assessment guide examines the student's developmental level; current services and equipment being used; unmet needs for communication and writing; potential to achieve; present instructional levels in reading, math, writing and typing, computer use, and communication/language functioning; specific barriers; and environmental considerations.

ED304858

Case Study Findings on the Implementation of Microcomputers in Special Education.

Hanley, Tom V.

17 Jan 1987; 39p. A condensed version of this paper was presented at the Annual Technology and Media Conference (2nd, Alexandria, Va, January 17, 1987).

EDRS PRICE - MF01/PC02 plus postage.

DOCUMENT TYPE: Research Report (143); Conference Paper (150)

MAJOR DESCRIPTORS: *Administrative Organization; *Computer Uses in Education; *Disabilities; *Educational Practices; *Microcomputers

A 1983 study examined the use of microcomputers in special education in 12 school districts. As a follow-up to that study, 3 years later, case studies were developed of 27 programs, including elementary/secondary school programs and educational or training centers for handicapped persons. Hypotheses of the research were organized into six major areas: organizational locus of control, collaboration in the use of microcomputers, balancing administrative and instructional applications, training for microcomputer use, emerging roles, and hardware and software issues. The follow-up study found that most of the earlier findings were valid, especially those related to organizational features that promote or inhibit computer use. Some evidence of improvement and progress were documented, such as increased levels of administrative involvement, expanded role of special education administrators in instructional technology decisions, availability of inservice training and technical assistance, and more diverse and sophisticated uses of computer-assisted instruction. Drill-and-practice applications remain the most common form of computer-assisted instruction, and the availability and distribution of resources is still an important concern. A general conclusion is offered that progress has been made but it will be many more years before new technologies are systematically integrated in the instruction of students with disabilities.

ED303012

Express Yourself: Communication Disabilities Need Not Be Handicaps.

Johnson, Peg L.

1987, 182p.

AVAILABLE FROM: Communication Skill Builders, 3830 E. Bellevue, P.O. Box 42050, Tucson, AZ 85733 ($9.95 plus $2.00 postage and handling, Catalog No. 7593-B).

EDRS PRICE - MF01 plus postage. PC not available from EDRS.

DOCUMENT TYPE: Non-Classroom Material (055)

MAJOR DESCRIPTORS: *Communication Aids (for Disabled); *Communication Disorders; *Computer System Design; *Electronic Equipment; *Input Output Devices; *Microcomputers

MAJOR IDENTIFIERS: *Augmentative Communication Systems

Individuals with communicative disorders can achieve self-expression through the use of portable electronic augmentative communication aids. Real-life examples describe how individuals use microcomputers and other communication aids, such as "Express III," "Light Talker," "Phonic Mirror Handivoice 110," "Canon Communicator Mark II," "TETRAscan," "Votrax Speech Synthesizer," "Gemini Eye Printer," "Rescue Speech System," "Softkey System," "Koala Pad," "Echo GP," "AVOS System," and software using Blissymbolics. To select the best device, prospective users must identify the need for a communication device, the degree to which it will be used, limitations imposed by the disability, and particular functions required. Important factors to consider include communication speed, independent operation, input methods, types of output, language characteristics, flexibility and growth, feedback characteristics, portability, costs, and service and support. An overview is presented of types of portable communication devices, covering: devices using direct selection for input, scanning, or either; devices for individuals who are blind, visually impaired, deaf-blind, or hearing-impaired; telephone devices for motor-impaired persons and for speech amplification; and speech synthesizers. Sources of funding are identified, along with steps in developing a funding plan. The book concludes with an outline of trends and challenges, and a list of resources, including manufacturers of communication aids, organizations, etc.

ED297503

Trace Authored Papers from the Annual Conference on Rehabilitation Technology (10th, San Jose, California, 1987).

Lee, Charles C.; And Others

Wisconsin University, Madison. Trace Center.

1987; 16p. A product of the Trace Research and Development Center on Communication, Control, and Computer Access for Handicapped Individuals. Small print may affect readability.

AVAILABLE FROM: Trace Center, University of Wisconsin-Madison, Waisman Center, 1500 Highland Ave., Madison, WI 53705-2280.

EDRS PRICE - MF01/PC01 plus postage.

DOCUMENT TYPE: Conference Proceedings (021); Project Description (141)

MAJOR DESCRIPTORS: *Accessibility (for Disabled); *Disabilities; *Input Output Devices; *Microcomputers; *Occupational Therapy; *Performance Factors

Three conference papers on rehabilitation technology, authored by staff members of the Trace Research and Development Center, form this collection. The first, "Keyboard Equivalent for Mouse Input" by Charles Lee and Gregg Vanderheiden, describes implementation of a keyboard mouse input device using the numeric keypad. The paper discusses experimentation with such features as smooth point motion, single pixel motion, and adjustable speed and acceleration of the pointer. The second paper, "Using the Occupational Therapy Comprehensive Functional Assessment (OTCFA) To Evaluate the Efficacy of Technological Intervention in Rehabilitation" by Roger Smith, reviews the historical development of rehabilitation assessments. It describes the introduction of a tool to integrate various aspects of functional assessment and provide a standard, comprehensive method for assessing the overall performance of an individual, including the technological equipment and environmental factors contributing to performance. The final paper, "Features To Increase the Accessibility of Computers by Persons with Disabilities: Report from the Industry/Government Task Force" by Gregg Vanderheiden, Charles Lee, and Lawrence Scadden, discusses the Task Force's efforts to identify difficulties faced by disabled persons in the use of standard computers, possible approaches for reducing the difficulties, and current microcomputer features which facilitate use by disabled persons.

ED306745

Technology Integration in Problem Solving Training: The Family Perspective.

Margalit, Malka; And Others

Dec 1988, 28p. Paper presented at the Council for Exceptional Children/Technology and Media Division Conference on Special Education and Technology (Reno, NV, December 11-13, 1988).

EDRS PRICE - MF01/PC02 plus postage.

DOCUMENT TYPE: Conference Paper (150); Research Report (143)

MAJOR DESCRIPTORS: *Computer Assisted Instruction; *Disabilities; *Expectation; *Intervention; *Parent Participation; *Parent Role

Two studies explored parental expectations and home computer practice in families with special needs children. The first involved 48 parents of special needs children, aged 3.6 to 14.5 years. On a coping instrument, a mood scale, and a difficulties and expectations scale, parents indicated that important concerns for their children included: ability for independent life in adulthood, vocational opportunities, learning difficulties, and leisure activities. Health difficulties, discipline problems, and social difficulties were less emphasized. Parents viewed the computer as a source of help in learning, leisure activities, and widening future vocational possibilities. Compared to mothers, fathers expressed higher levels of concern regarding their children's difficulties and higher expectations from use of technology. In a second study, 14 fathers and 10 mothers, representing 18 families, participated in group meetings which involved a study of information processing and problem solving; and training in use of Niflaot software, a Hebrew software which enhances keyboard and writing skills of special education children. Observations revealed that parents initially had over-enthusiastic expectations, and subsequently reduced their active involvement due to parental role overload and fatigue. Fathers were more involved than mothers and slowly developed a new ground for parent-child interactions, but also experienced fatigue and role overload.

ED299720

Access: Exceptional Children and Technology.

North Carolina State Department of Public Instruction, Raleigh. Division for Exceptional Children.; North Carolina State Department of Public Instruction, Raleigh. Division of Computer Services.

1988, 110p.

EDRS PRICE - MF01/PC05 plus postage.

DOCUMENT TYPE: Teaching Guide (052); Project Description (141)

MAJOR DESCRIPTORS: *Assistive Devices (for Disabled); *Computer Assisted Instruction; *Computer Software; *Computer Uses in Education; *Disabilities; *Microcomputers

MAJOR IDENTIFIERS: *Apple II

The Exceptional Children and New Technology project sought to meet the instructional needs of physically handicapped, emotionally disturbed, learning disabled, and mentally handicapped children through the use of computer technology. The goals of the project were to test the instructional value of adaptive/assistive devices with exceptional children and to determine the best products, software, and applications. Four North Carolina elementary and middle schools were chosen as pilot sites. Representative adaptive/assistive devices and software were purchased, compatible with Apple II equipment. The subject area addressed was elementary-level language arts and reading. Teachers and coordinators were trained to use the products and developed learning activities with the resources. Guidelines were developed to assist teachers in using the new technology in their classrooms. For physically handicapped students, Apple IIe keyboard modifications were implemented. Approximately 20 learning activities are described in this guide. Each activity description provides appropriate ages, level of functioning, exceptionality, skill objective of the activity, basic education program correlation, software and hardware used, and a brief lesson plan. The guide concludes with: (1) forms for sample lesson plans and computer log sheets, and (2) listings of software for use with exceptional children.

ED297545

Accessible Computers from the Box.

Vanderheiden, Gregg C.

Wisconsin University, Madison. Trace Center.

1987; 15p. A product of the Trace Research and Development Center on Communication, Control, and Computer Access for Handicapped Individuals. Print in charts is small.

AVAILABLE FROM: Trace Center, University of Wisconsin-Madison, Waisman Center, 1500 Highland Ave., Madison, WI 53705-2280 ($1.25).

EDRS PRICE - MF01 plus postage. PC not available from EDRS.

DOCUMENT TYPE: Conference Paper (150); Non-Classroom Material (055)

MAJOR DESCRIPTORS: *Assistive Devices (for Disabled); *Computers; *Design Requirements; *Disabilities; *Electronic Equipment

The paper briefly discusses the design of computers to allow their use by the 20% of the American population who have reduced abilities in such areas as manipulation, vision, hearing, and cognition. The role of manufacturers of standard computers in increasing computer accessibility is one of providing computers that can be used by an increasing number of individuals as well as providing the special "hooks" that special rehabilitation developers need in order to create and connect special adaptations for individuals with more severe handicaps. Specific problem areas and suggested solutions are offered for persons with movement disabilities, visual impairments, hearing impairments, and cognitive impairments. Mechanisms for making computers more accessible are grouped into five types in two categories: first, features to allow access and use of public or shared computers and second, features to facilitate use of personally owned or controlled computers. Tables provide a listing of software, operating system, and hardware modifications to improve input accessibility, output/display accessibility, and controls, media and documentation accessibility, and personal workstation modification facilitation. Modifications are listed in terms of the problem, examples, design recommendations, and design examples.

ED297501

Commonly Asked Questions: Computers. Revised.

Wisconsin University, Madison. Trace Center.

1987; 7p. A product of the Trace Research and Development Center on Communication, Control, and Computer Access for Handicapped Individuals.

AVAILABLE FROM: Trace Center, University of Wisconsin-Madison, Waisman Center, 1500 Highland Ave., Madison, WI 53705-2280 (single copy free, $0.60 each additional copy).

EDRS PRICE - MF01/PC01 plus postage.

DOCUMENT TYPE: Non-Classroom Material (055)

MAJOR DESCRIPTORS: *Assistive Devices (for Disabled); *Computer Software; *Computer System Design; *Disabilities; *Input Output Devices; *Microcomputers

A microcomputer can be used in many different ways to assist people with disabilities. A computer's usefulness for a given individual is determined by the computer applications that are needed and by the specific problems the disability presents. In general, there are currently three ways that people with disabilities can use a microcomputer: (1) Many special software programs that run on standard computers have been written or adapted specifically for use by individuals with physical disabilities. They include communication and writing programs, word processing programs, motor training games, educational software, and therapy and assessment programs. (2) The operating system of a computer can be modified to accommodate special adaptations in the input or output process and to increase the rate of input. Standard software can then be used. (3) Hardware modifications can also enable disabled individuals to use standard software. These adaptations consist of simple modifications to the keyboard, disk drives, or computer screens, and connection of special alternate keyboards, disk drives, or alternate displays. A list of information sources on hardware and software developments concludes the paper.

ED297497

Quick Information Sheets. 1988.

Wisconsin University, Madison. Trace Center.

1988, 94p. A product of the Trace Research and Development Center on Communication, Control, and Computer Access for Handicapped Individuals.

AVAILABLE FROM: Trace Center, University of Wisconsin-Madison, Waisman Center, 1500 Highland Ave., Madison, WI 53705-2280 ($5.00).

EDRS PRICE - MF01/PC04 plus postage.

DOCUMENT TYPE: Bibliography (131); Directory (132)

MAJOR DESCRIPTORS: *Communication Aids (for Disabled); *Communication Disorders; *Computer Peripherals; *Computers; *Organizations (Groups); *Resource Materials

The Trace Center gathers and organizes information on communication, control, and computer access for handicapped individuals. The information is disseminated in the form of brief sheets describing print, nonprint, and organizational resources and listing addresses and telephone numbers for ordering or for additional information. This compilation of information sheets produced in 1988 covers the following topics: adaptive toys and toy modifications; books, pamphlets, and organizations; information resources for blind and visually impaired individuals; computer assessment and training programs for disabled individuals; information resources for deaf and hearing-impaired individuals; head pointers, light pointers, and mouthsticks; keyguards; keyboard modification programs; manufacturers of electronic communication aids; networks, bulletin boards, and databases; portable battery-operated printers; pointing, typing, and communication accessories; optical character recognition scanners; training programs in technology for special education; portable typewriters; newsletters and journals; associations, advocacy groups, and self-help groups; service centers for augmentative communication and computer access; software resources; speech input systems; speech output computer programs for communication; speech synthesizers; manufacturers of switches and controls; and videotapes on augmentative communication and computer access.

Distance Education

ED302213

Networking in Education. The Need for Managerial and Political Innovations.

Blaschke, Charles L.

Nov 1986, 21p. In: *Learning Tomorrow. Journal of the Apple Education Advisory Council*, n4 p311-331 Win 1988. For the complete journal, see ED 302 197.

EDRS PRICE - MF01/PC01 plus postage.

DOCUMENT TYPE: Conference Paper (150); Journal Article (080)

MAJOR DESCRIPTORS: *Computer Networks; *Distance Education; *Educational Innovation; *Local Area Networks; *Politics of Education; *Telecommunications

This paper provides commentary on some of the issues and projects considered in other papers presented at the conference, focusing in particular on some of the nontechnological issues associated with the design, development, and implementation of telecomputing and networking in education. Four types of telecomputing projects are considered: national telecomputing projects, statewide networks, local or community-based networks, and hybrid interactive distance learning projects. It is suggested that the major challenges in these four areas are political and economic, and that the high turnover rate of individuals involved in such projects is due to these political and economic issues, as well as to the volatile nature of telecomputing and networking ventures in education. The fact that half of the authors who presented papers at the conference in September 1986 are no longer officially involved in the projects they described is cited as an example of this instability. It is argued that if the potential of telecomputing, distance learning, and other projects is to be realized, these problems must be addressed at various policy levels.

ED302210

Distance Learning in Alaska's Rural Schools.

Bramble, William J.

Nov 1986, 16p. In: *Learning Tomorrow. Journal of the Apple Education Advisory Council*, n4 p241-256 Win 1988. For the complete journal, see ED 302 197.

EDRS PRICE - MF01/PC01 plus postage.

DOCUMENT TYPE: Conference Paper (150); Journal Article (080)

MAJOR DESCRIPTORS: *Distance Education; *Educational Technology; *Interactive Video; *Program Evaluation; *Rural Education; *Teleconferencing

MAJOR IDENTIFIERS: *Alaska

The distance education and instructional technology projects that have been undertaken in Alaska over the last decade are detailed in this paper. The basic services offered by the "Learn Alaska Network" are described in relation to three user groups: K-12 education; postsecondary education; and general public education and information. The audio conferencing services of the network are also described, and the declining financial fortunes of all but the audio conferencing network are detailed. Some observations from these experiences are made, and issues that should be addressed in future projects are identified.

ED308046

Distance Education: A Program and Facility Study.

Holt, Malcolm; And Others

HSP Humanite Services Planning Ltd. (Alberta).

May 1988, 117p. Prepared for the Distance Learning in Small Schools Project. Some diagrams may not reproduce well.

EDRS PRICE - MF01/PC05 plus postage.

DOCUMENT TYPE: Review Literature (070); Non-Classroom Material (055)

MAJOR DESCRIPTORS: *Access to Education; *Computer Assisted Instruction; *Computer Managed Instruction; *Distance Education; *Nontraditional Education

This publication provides both a review of the different technology modes that may be used for distance education and a set of guidelines for planning and developing conceptual designs for educational facilities capable of supporting technologically enhanced educational delivery systems in a variety of settings. The Distance Learning in Small Schools Project of the Alberta Department of Education conducted a survey of the current literature on distance education and identified five major areas of investigation: (1) aims of distance education; (2) appropriate technology modes; (3) design considerations; (4) relationships between the distance education suite and adjacent instructional areas; and (5) human communications, such as effect on education paradigm, role of teacher, attitudes and behaviors of teachers and students. The available technology offers these advantages: suitability for individualization, equitable accessibility, and increased student motivation. Conversely, a technology-based learning environment is complex and can separate students from each other and from their teachers. The appropriate mix of courseware must be selected to satisfy instructional objectives, followed by choice of hardware. Included in this report are: (1) a glossary of technological terms; (2) a review of existing technology; (3) an explanation by means of a schematic layout of different modes of distance education; (4) a diagrammatic planning and design guide for different types of distance education suites and for a student workstation; (5) illustrated data sheets and workstation specifications; and (6) an analysis of cost implications. A 57-item bibliography, as well as an overview of technology and a cost analysis, are appended.

ED304111

Delivery Systems for Distance Education. ERIC Digest.

Schamber, Linda

ERIC Clearinghouse on Information Resources, Syracuse, N.Y.

May 1988, 3p.

AVAILABLE FROM: ERIC Clearinghouse on Information Resources, 030 Huntington Hall, Syracuse University, Syracuse, NY 13244-2340 (free while supply lasts).

EDRS PRICE - MF01/PC01 plus postage.

DOCUMENT TYPE: ERIC Product (071); Project Description (141)

MAJOR DESCRIPTORS: *Distance Education; *Educational Television; *Electronic Mail; *Teleconferencing; *Telephone Instruction; *Videotex

This ERIC digest provides a brief overview of the video, audio, and computer technologies that are currently used to deliver instruction for distance education programs. The video systems described include videoconferencing, low-power television (LPTV), closed-circuit television (CCTV), instructional fixed television service (ITFS), and cable television (CATV). Several types of audiographic teleconferencing are then described, including telefacsimile (FAX), freeze-frame or slow scan video, and compressed video. Audioconferencing is cited as the principal use of audio telephone delivery, but it is noted that other options are also available, including the use of an audio bridge to enable two-way interaction among groups at three or more locations. Computer conferencing options are also described, including electronic mail networks, electronic bulletin board services (BBSs), and teletext and videotex. A brief discussion of distance education concludes the digest. (14 references)

ED302206

Learning Link. A Model for Low-Cost Educational Networks.

Spielvogel, Robert A.

Nov 1986, 20p. In: *Learning Tomorrow. Journal of the Apple Education Advisory Council*, n4 p165-184 Win 1988. For the complete journal, see ED 302 197.

EDRS PRICE - MF01/PC01 plus postage.

DOCUMENT TYPE: Conference Paper (150); Journal Article (080)
MAJOR DESCRIPTORS: *Computer Networks; *Curriculum Enrichment; *Information Networks; *Public Television; *Resource Materials
MAJOR IDENTIFIERS: *New York (New York Metropolitan Area)

This paper describes Learning Link, a pilot project interactive communications system which provides support materials for the instructional television program of WNET/Thirteen, the New York Metropolitan area public television station. Features of the system are described, including databases, bulletin-board-like conferences, information libraries, and electronic mail, and it is suggested that Learning Link provides a potential model for effective and cost efficient servicing of pre-college educational institutions on a regional basis. Some of the experiences and problems encountered in the system's development and operation are discussed, particularly those with broader implications for organizations interested in using technology to improve access to educational resources.

ED303134

Development Communication Report. No. 56-59.

Agency for International Development (Department of State), Washington, D.C. Clearinghouse on Development Communication.

1987, 62p. *Development Communication Report*, n56-59 1987. For issues No. 50-55, see ED 288 513.
EDRS PRICE - MF01/PC03 plus postage.
DOCUMENT TYPE: Serial (022); Position Paper (120); Project Description (141)
MAJOR DESCRIPTORS: *Developing Nations; *Educational Radio; *Health Education; *Rural Extension; *Teleconferencing; *Videotape Recordings
MAJOR IDENTIFIERS: *Rural Satellite Program

Four issues of this newsletter focus primarily on the use of communication technologies in developing nations to educate their people. The issues included in this collection are: (1) No. 56 (1987-1), which highlights agricultural, health, and educational projects that have used radio, telecommunications, and interactive video to train trainers and/or reach their target audiences; (2) No. 57 (1987-2), which features reports on pilot projects of the U.S. Agency for International Development-supported Rural Satellite Program in Indonesia, Peru, and the Caribbean, and communication strategies and lessons learned from HIV (Human Immunodeficiency Virus) and AIDS (Acquired Immunodeficiency Syndrome) education efforts in the United States and the developing world; (3) No. 58 (1987-3), which describes the use of radio and videotape recordings to disseminate agricultural and public health information in the rural areas of developing countries; and (4) No. 59 (1987-4), which focuses on the use of comics and video for disseminating health information and ongoing interactive radio instruction activities in Honduras, the Dominican Republic, Bolivia, Lesotho, and Papua New Guinea. Reviews of recent publications and announcements of development-related conferences and courses are included in individual issues.

ED300592

Utilizing Modern Technology in Adult and Continuing Education Programs.

New York State Education Department, Albany. Bureau of Curriculum Development.; New York State Education Department, Albany. Division of Adult and Continuing Education Programs.

1988, 48p. For the guide to which this is a supplement, see ED 232 019.
AVAILABLE FROM: George T. Tregaskis, Room 314 EB, New York State Education Department, Albany, NY 12234.
EDRS PRICE - MF01/PC02 plus postage.
DOCUMENT TYPE: Teaching Guide (052)
MAJOR DESCRIPTORS: *Adult Education; *Computer Assisted Instruction; *Educational Television; *Management Information Systems; *Staff Development; *Videotape Recordings

Designed as a supplement to the manual entitled *Managing Programs for Adults* (1983), this publication provides guidelines for establishing or expanding the use of video and computers by administration and staff of adult education programs. The first section presents the use of video technology for program promotion, instruction, and staff development and training. Types of promotional programs and services, a listing of promotional resources, and production of promotional videotapes are discussed. Video use in adult education classrooms and as a means to teach otherwise difficult-to-reach populations is described. This includes ways to use video, its advantages and limitations, materials needed to use video, and cost and sources of videotapes. In addition to practical considerations in buying video equipment and means of ensuring its use, advantages and ways of using video for staff development and training are discussed. The second section addresses instructional and managerial applications of computers to adult and continuing education. Examples drawn from both funded and fee-supported programs provide models of applications. Positive aspects and future potentials for the computer as a management tool are described and the pros and cons of software are explored, along with the alternatives to commercially produced software. An annotated list of supplementary software programs and a directory of vendors and references conclude this section.

Learning Disabled

ED303018

CREATE: Center for Research and Evaluation in the Application of Technology to Education. Second Annual Report.

American Institutes for Research in the Behavioral Sciences, Palo Alto, CA.

Dec 1985, 45p.

EDRS PRICE - MF01/PC02 plus postage.

DOCUMENT TYPE: Project Description (141)

MAJOR DESCRIPTORS: *Computer Assisted Instruction; *Computer Uses in Education; *Instructional Design; *Instructional Effectiveness; *Learning Disabilities

MAJOR IDENTIFIERS: *TurboScan

The second annual report of the 4-year Project CREATE describes activities toward the Project's overall objective of determining how effective microcomputer and related technologies can be in improving the education of learning disabled students. During the second year examination of factors understood to contribute to the beneficial use of technology for the handicapped was continued; a descriptive study of state and local leadership development in the area was completed; and a two-tiered software evaluation instrument was completed and field testing plans were developed. A major effort of the year was the detailed design and development of the TurboScan reading instruction and research system. The program incorporates automatic data collection on subject performance, easily variable software display and reinforcement characteristics. A report on the field test of the TurboScan program comprises a major portion of the document. Project plans for the third year include determining the types of benefits accruing to the learning disabled when particular design features are included in special purpose software. Appended are the Project objectives, a scope and sequence chart for TurboScan lessons, advertisements for other instructional software, and an information bulletin.

ED298683

Beyond Drill and Practice: Learner-Centered Software. Abstract 16: Research & Resources on Special Education.

ERIC Clearinghouse on Handicapped and Gifted Children, Reston, VA.

Jan 1988, 3p. For the original report on which this extended abstract is based, see ED 298 677.

AVAILABLE FROM: ERIC/OSEP Special Project on Interagency Information Dissemination, Council for Exceptional Children, 1920 Association Dr., Reston, VA 22091 (free).

EDRS PRICE - MF01/PC01 plus postage.

DOCUMENT TYPE: Book-Product Review (072)

MAJOR DESCRIPTORS: *Computer Assisted Instruction; *Computer Software; *Emotional Disturbances; *Learning Disabilities; *Microcomputers; *Research and Development Centers

MAJOR IDENTIFIERS: *Learner Centered Instruction

This one-page abstract describes a report titled *Microcomputers in Special Education: Beyond Drill and Practice* by Susan Russell, which focuses on a project that created a consortium to promote research, training, and dissemination in learner-centered software for elementary and middle-school students with learning disabilities and emotional disorders. Members of the consortium included the Technical Education Research Center, Lesley College (a teacher training institution in Cambridge, Massachusetts), the Massachusetts Department of Education, local education agencies, and members of the research community. Activities carried out by the consortium have included: (1) a national survey of teachers and administrators on the use of learner-centered software; (2) identification of promising practices; (3) establishment of a local special interest group of educators using learner-centered software; (4) development of a practicum course in the use of such software; (5) establishment of research collaborations to explore such activities as using word processors to teach writing, involving learning-disabled students in scientific investigations, and teaching below-grade-level children to understand mathematical concepts without the burden of calculation; and (6) preparation of a handbook for special educators.

ED297548

Microcomputer Evaluation and Production Guidelines for Students with Learning Disabilities: Two Studies.

Lee, William W.

17 Oct 1987, 39p. Paper presented at the Annual International Conference on Learning Disabilities (San Diego, CA, October 17, 1987).

EDRS PRICE - MF01/PC02 plus postage.

DOCUMENT TYPE: Non-Classroom Material (055); Conference Paper (150); Test, Questionnaire (160)

MAJOR DESCRIPTORS: *Computer Assisted Instruction; *Courseware; *Instructional Material Evaluation; *Learning Disabilities; *Microcomputers

The two studies established an empirically derived set of guidelines for producing and evaluating microcomputer courseware for students with learning disabilities. About 100 teachers of learning disabled students in Pennsylvania and Virginia participated in field testing the guidelines. The first study was conducted in four steps: first, development and validation of the instrument; second, establishment of interrater agreement on one piece of courseware; third, rank ordering by teachers of the importance of criteria on the instrument; and fourth, use of the instrument to rate four pieces of courseware. Study 2 duplicated the third step of the original study with different teachers. The conclusions of the study established nine essential criteria for evaluating and producing software: (1) directions the students must read should be simple; (2) alternate means of presenting the same concept must be provided; (3) the screen must be uncluttered; (4) minimal keyboard skills should be necessary; (5) feedback regarding correctness or incorrectness must be provided; (6) adequate opportunity to review concepts must be provided; (7) very basic skills that non-handicapped students would learn incidentally must be taught; (8) prompts to keep students moving through the program must be provided; and (9) the courseware must aim for mastery learning. The questionnaire and tables are appended.

ED300970

Software Programs for Learning Disabled Students: Second Report.

Osterag, Bruce A.; Graves, Anne

California State Department of Education, Sacramento. Division of Special Education.

1988, 21p. The document was produced by Resources in Special Education.

AVAILABLE FROM: Resources in Special Education, 650 University Ave., Room 201, Sacramento, CA 05825 ($4.00).

EDRS PRICE - MF01 plus postage. PC not available from EDRS.

DOCUMENT TYPE: Non-Classroom Material (055)

MAJOR DESCRIPTORS: *Computer Assisted Instruction; *Computer Software; *Learning Disabilities; *Microcomputers; *Program Evaluation; *Rating Scales

Microcomputer software can provide excellent drill and practice, simulations, and problem-solving. Yet, software developers often have designed elaborate graphics and unique characters in lieu of sound instructional programming. Many instructional programs for learning-disabled students do not provide appropriate reading levels, the opportunity to make decisions, logical and detailed instructional formats, correction procedures in the case of error, recordkeeping options, or imaginative programming. The following essential features should be included: immediate reinforcement of student responses, individual pacing, nonemotional input during needed repetitions, undivided attention during input, reduction of distractions, nonjudgmental responses, intrinsic motivation, and student control as well as computer control. An evaluation screening tool is presented that can quickly and successfully determine the usefulness of a software program through examination of its instructional content, educational quality, and general quality. Suggestions are offered for encouraging software development by companies, institutions of higher education, and computer-user groups. A list of 28 software evaluation sources and directories is presented. The report concludes with a list of 69 software programs recommended for use with the learning-disabled, in the areas of microcomputer instruction; typing; quiz or lesson generators; word processing/integrated programs; cognitive, perceptual, spatial skills; mathematics; language arts and reading; and teacher utility programs.

ED298677

Microcomputers in Special Education: Beyond Drill and Practice. Final Report.

Technical Education Research Center, Cambridge, MA.

1987, 158p. Prepared for the Educational Media Research Production, Distribution, and Training Program. Many light pages will not reproduce well. For one-page abstract, see ED 298 683.

EDRS PRICE - MF01 plus postage. PC not available from EDRS.

DOCUMENT TYPE: Project Description (141)

MAJOR DESCRIPTORS: *Computer Assisted Instruction; *Computer Uses in Education; *Disabilities; *Microcomputers

The 2-year project's primary purpose was to create a consortium, consisting of a teacher training institution, the Massachusetts State Department of Education, local educational agencies, and the research community; the consortium would serve as a mechanism for promoting research, training, and dissemination in the area of innovative microcomputer use in the education of learning disabled and emotionally disturbed students in elementary and middle schools. Learner centered software (LCS), other than drill and practice software, is defined and project objectives (such as developing a practicum course, establishing research collaborations, and writing a handbook for special educators) are specified. Activities included establishing a special interest group (SIG) in the eastern Massachusetts region, developing a graduate program practicum course at Lesley College, surveying the use of LCS with special education students on a national basis, and dissemination through articles and presentations. Appendixes (the bulk of the document) include copies of the SIG newsletters, letters from SIG members, practicum course descriptions, the complete survey report, an article on the survey, the outline of the handbook, and two sample chapters from the handbook titled: "Using the Computer To Teach Writing" and "Using the Computer To Develop Problem Solving and Critical Thinking Skills."

Preschool Education

ED300147

Computer Presentational Features for Young Children's Preferential Selection and Recall of Information.

Calvert, Sandra L.; And Others

May 1988, 26p. Paper presented at the Annual Meeting of the International Communication Association (New Orleans, LA, May 1988). Supported by a grant from the Research Council at the University of North Carolina, Greensboro.

EDRS PRICE - MF01/PC02 plus postage.

DOCUMENT TYPE: Conference Paper (150); Research Report (143)

MAJOR DESCRIPTORS: *Auditory Stimuli; *Computer Software; *Recall (Psychology); *Selection; *Visual Stimuli

MAJOR IDENTIFIERS: *Microworlds

The purpose of this study was to examine the impact of visual and auditory presentational features on young children's selection and memory for verbally presented content. Assessed as a function of action and sound were preschool children's preferential selection and recall of words presented in a computer microworld. A computer microworld consists of scenarios providing options to move various objects on a static but vivid pictorial background. The objects, called "sprites," are programmed to have particular shapes, colors, movements, and sounds. In this study, 40 preschoolers, equally distributed by sex, were randomly assigned to one of four versions of a microworld. Within each version, 24 sprites were randomly assigned action and sound properties. The experimental design was counterbalanced so that in each version every sprite assumed all possible factorial combinations of action and sound. Children preferentially selected and recalled more words presented with action than words presented without action. Although children selected sounds, sounds interfered with children's recall of linguistic information. Results supported an action superiority hypothesis and an auditory interference hypothesis. These results suggest that action should be an integral component of educational computer software designed for young children. Cited are 25 references.

ED305063

Computers and Head Start Children: Opening New Doors and Creating Challenges.

Cohen, Rochelle F.; Blackwell, Jacqueline

Nov 1988, 23p.

EDRS PRICE - MF01/PC01 plus postage.

DOCUMENT TYPE: Evaluative Report (142)

MAJOR DESCRIPTORS: *Computer Literacy; *Instructional Development; *Preschool Children; *Skill Development; *Teaching Methods

MAJOR IDENTIFIERS: *Project Head Start; *Software Selection

This paper describes the implementation and evaluation of a computer literacy program for 4-year-old Head Start students and their teachers that was developed through the efforts of the Indianapolis Head Start program, the Children's Museum, and the Indiana University School of Education. The report covers: (1) the objectives of the program; (2) a schedule of program activities; (3) staff training prior to the program; (4) plans for the implementation of computer sessions; and (5) criteria for the selection of software. The results of the program are reported, including a comparison of the pretest and posttest scores for the correct identification of computer parts by the children in the experimental group and a control group of nonparticipating children. Observations by the researchers of what they learned from the project are also provided, including observations on staffing, volunteers, parents, and university students who assisted with the project; a listing of skills enhanced during the computer experiences; a summary of general problems and concerns; and observations on teacher training. In conclusion, it is noted that the children found the experience exciting and meaningful, and the project engendered considerable parent involvement. (2 tables and 15 references)

ED302334

Sex Typing of Young Children's Behaviours in a Computer Active Preschool Classroom. Project Report: A Working Paper.

Elliott, Alison

Jun 1988, 18p. Paper presented at the National Educational Computing Conference (Dallas, TX, June 15-17, 1988).

EDRS PRICE - MF01/PC01 plus postage.

DOCUMENT TYPE: Research Report (143); Conference Paper (150)

MAJOR DESCRIPTORS: *Childhood Attitudes; *Learning Centers (Classroom); *Microcomputers; *Play; *Preschool Children; *Sex Stereotypes

MAJOR IDENTIFIERS: *Australia

Outlined are preliminary findings from a study of computer use by Australian preschool children. Subjects were 90 children of 4 years who were enrolled in four Sydney preschool classes. A computer was set up in a learning center and was available to the children during free play sessions. Children's behaviors were observed and recorded as the children used a drawing program and a single key stroke version of Logo with a floor "turtle." Observations took place over a 5- to 6-week period. Reported results focus on: (1) computing knowledge, attitudes, and experience; (2) expressed play preferences; (3) frequency and duration of computer play; and (4) play style in the computer area. Findings suggest that 4-year-old children may already be seeing the use of computers in society and the classroom as a male-oriented activity. The possible sex typing of computing and computer-based activities at such an early age has several implications that are related to the development of differential skills, attitudes, outlooks, and future goals. It is concluded that early childhood educators need to take action to encourage more gender equitable participation and experience in computer use.

ED306745

Technology Integration in Problem Solving Training: The Family Perspective.

Margalit, Malka; And Others

Dec 1988, 28p. Paper presented at the Council for Exceptional Children/Technology and Media Division Conference on Special Education and Technology (Reno, NV, December 11-13, 1988).

EDRS PRICE - MF01/PC02 plus postage.

DOCUMENT TYPE: Conference Paper (150); Research Report (143)

MAJOR DESCRIPTORS: *Computer Assisted Instruction; *Disabilities; *Expectation; *Intervention; *Parent Participation; *Parent Role

Two studies explored parental expectations and home computer practice in families with special needs children. The first involved 48 parents of special needs children, aged 3.6 to 14.5 years. On a coping instrument, a mood scale, and a difficulties and expectations scale, parents indicated that important concerns for their children included: ability for independent life in adulthood, vocational opportunities, learning difficulties, and leisure activities. Health difficulties, discipline problems, and social difficulties were less emphasized. Parents viewed the computer as a source of help in learning, leisure activities, and widening future vocational possibilities. Compared to mothers, fathers expressed higher levels of concern regarding their children's difficulties and higher expectations from use of technology. In a second study, 14 fathers and 10 mothers, representing 18 families, participated in group meetings which involved a study of information processing and problem solving; and training in use of Niflaot software, a Hebrew software which enhances keyboard and writing skills of special education children. Observations revealed that parents initially had overenthusiastic expectations, and subsequently reduced their active involvement due to parental role overload and fatigue. Fathers were more involved than mothers and slowly developed a new ground for parent-child interactions, but also experienced fatigue and role overload.

ED299060

Microcomputers in Preschool Environments: Answers to Questions, Theoretical Guidance and Future Directions.

Shade, Daniel D.; Watson, J. Allen
1988, 32p.
EDRS PRICE - MF01/PC02 plus postage.
DOCUMENT TYPE: Position Paper (120)

MAJOR DESCRIPTORS: *Computer Software; *Computer Uses in Education; *Educational Theories; *Microcomputers; *Preschool Children; *Preschool Education
MAJOR IDENTIFIERS: *Microworlds

Since computers were first introduced into early childhood educational settings, much debate has centered on the issue of appropriateness. This paper takes issue with a number of often cited reasons for not including computers in preschool, and advances a theoretical base for computer use in early childhood. The paper also offers a review of successful computer programs which includes a discussion of directions for software development. The first part of the paper takes up such issues as young children's capacity to learn from computer graphics, effects of computer use on children's social interactions and other activities, and the notion that young children must become programmers to use microcomputers. Next, the paper draws on theories of Piaget, Papert, and Erikson to explore the topics of computers as aids to thinking and tools that enable development, and computers and the instrumental competence model. Finally, the paper argues that learning in early childhood can be enhanced by discovery-oriented child-computer interactions, and advocates use of an expanded microworld format that relieves the child of programming requirements, but retains aspects essential to discovery-based learning. It is concluded that the microcomputer, when coupled with discovery-oriented microworld software, can empower young children's development. About 80 references are cited.

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ERIC DIGEST

May 1990

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TRENDS AND ISSUES IN EDUCATIONAL TECHNOLOGY: 1989

This digest is based on **Trends and Issues in Educational Technology 1989**, by Donald P. Ely, available from the ERIC Clearinghouse on Information Resources.

A content analysis was performed to determine the trends and issues in the field of educational technology for the period from October 1, 1988 through September 30, 1989. Sources for the analysis included four leading professional journals in educational technology; papers given at annual conventions of three professional associations; dissertations from five universities that have a high level of doctoral productivity; and the educational technology documents that have been entered into the ERIC database. The analysis was complemented by the examination of supplementary documents to determine the political, social, and economic reasons for the findings.

This digest features the top trends and selected issues identified in the study. For a full discussion of the study methodology and findings, the reader is referred to the source noted above.

TREND: Concern for design and development of instructional products and procedures dominates the professional literature.

Design and development are concerned with several subtopics: needs assessment, task analysis, learner characteristics, message design, product development, and motivational strategies. Instructional design focuses on the product itself and the lesson is the unit of analysis; instructional development is broader and usually deals with the course as the unit of analysis. From both perspectives, the medium is usually secondary to goals, objectives, and context of use. The increasing recognition of the importance of instructional material design and the strategies used to deliver information is reflected in a swing away from the preoccupation with hardware toward a concern for the systematic development of software. Much of the literature emphasized the design of interactive, multimedia products using new tools such as HyperCard (Apple Computer's hypermedia product).

Issue:

- How can instructional materials be designed to help learners use higher order thinking skills?

TREND: Evaluation is becoming an integral part of the instructional design and development process.

Evaluation seems to be emerging as a distinct area within instructional design and development and has established itself within the field of educational technology. Seventy-four percent of the professional academic programs now include courses in evaluation as part of the curriculum (Johnson, 1989). Evaluation can be subdivided into at least four areas: product evaluation, process evaluation, cost-effectiveness, and formative evaluation. Among the year's articles and conference papers dealing with evaluation, product evaluation was the most popular topic. Most frequently this discussed the effectiveness of computer programs used in schools and colleges.

Issue:

- Should evaluation competencies be developed independently of design and development competencies (i.e., is evaluation separate or integral in the process of instructional design and development)?

TREND: There is increasing use of research and development knowledge to solve current problems of teaching and learning.

Much of the year's literature consisted of summaries of research and development findings, meta-analyses of research in specific areas, and reports of case studies. This reflects a growing recognition of existing work as useful for current efforts. When existing knowledge is synthesized it often becomes more useful than separate and isolated facts, and when successful programs are publicized, they are more likely to be adopted. The use of educational technology principles and practices in teaching and learning is the focus of 40 out of the 250 approved programs listed in the 1989 National Diffusion Network catalog, *Programs That Work*. The Southeastern Educational Improvement Laboratory's *Tapping the Potential of Educational Technology* lists 105 technology-oriented projects.

Issue:

- To what extent are existing research findings and case study results applicable in new settings?

TREND: Computers can be found in almost every public school in the United States.

Quality Education Data (1989) reports that 76,395 of the 79,693 public schools in the United States (over 95%) have two or more microcomputers. When the total number of microcomputers is calculated, there are 1,596,715 units, or an average of 19.8 units per school and an average microdensity of 25.4 students per microcomputer. In addition, an *Electronic Learning* (1989) survey of state education agencies revealed that 77% of the states are planning new, technology-related programs, and 93% of the states provide in-service computer education for certified teachers. While the momentum for computer use in education is accelerating, the need to move beyond "computer literacy" training and integrate computers more fully in the teaching and learning process is receiving attention.

Issue:

- How can computer-assisted instruction be integrated into the curriculum?

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TREND: Interactive video is widely accepted as a research and development product, but not in schools and higher education.

In 1989 there were three times as many articles in the interactive video category as there were in 1988. This reflects growth in the production and use of all forms of laser discs. For Education, it is clear that interactive video is still in its infancy and not ready for wholesale adoption. The *potential* of interactive video, especially for distance education, is recognized by educational technologists and educational leaders alike, and pilot programs are being reported in the literature. However, only a small number of schools have videodisc systems, and it is likely that relatively few of these are being used interactively.

Issue:

- Can interactive video be justified as a cost-effective teaching tool?

TREND: Distance education has become established as a major vehicle for instruction at all levels of education and training.

Distance education is prominent in the educational technology literature. While the organization and management of distance education encompasses much more than delivery systems, it is the delivery systems that bring distance education into the realm of educational technology. It is possible that educational technology may be redefined by distance education. The design and development of courseware is critical for learners who are working independent of face-to-face contact with a teacher. Like educational technology, distance education uses a full spectrum of media resources to deliver content, requires a management system that tracks each student, and has a major evaluation component with feedback mechanisms.

Issue:

- Which face-to-face instructional functions can effectively be replaced by distance education materials?

TREND: The definition, conduct, and status of professional education in the field continues to preoccupy practitioners.

Like professionals in any field, educational technologists ask questions about their changing roles and responsibilities; they worry about the education of future professionals and the upgrading of current practitioners; they look for recognition, especially from external colleagues; and they try to identify leadership from among their ranks. Conferences frequently serve as a forum for the expression of these concerns, many of which are generated in academic settings. The Professors of Instructional Design and Technology (PIDT) conference focused on four major themes which are consistent with much of the literature: (1) redefining the field; (2) improving graduate studies; (3) conducting research; and (4) identifying the role of educational technologists outside academic programs (Klein, 1989).

Issue:

- What changes are necessary in the programs to prepare professionals for service in the field of educational technology in light of the many technological changes that have occurred recently?

TREND: The impact of technology on individuals in the society at large continues to be considered by educational technology professionals.

People within the field of educational technology are asking questions about the consequences of their efforts on individuals who use the products and systems created by educational technology procedures. The effect of commercial television on young children continues to be explored and debated. The most recent analysis is an OERI publication, *The Impact on Children's Education: Television's Influence on Cognitive Development* (Anderson & Collins, 1988). The authors conclude that while research is sparse, there is no evidence that television has a mesmerizing effect on children's attention caused by color, movement, and visual changes; that children get overstimulated by television; or that television viewing displaces valuable cognitive activities.

Issue:

- How can learners of all ages be taught critical viewing and listening skills?

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